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Articles

PROTECTION OF THE PATIENT DURING DIAGNOSTIC RADIOGRAPHY

By
Surgeon Commander G. L. HARDMAN, R.N.

One of the conclusions of the Medical Research Council in their recently published report (1956) on nuclear and allied radiation hazards was that "no individual should not be allowed to accumulate more than 50 r of radiation to the gonads in addition to that received from natural background from conception to the age of 30 years and this allowance should not apply to more than one fifteenth of the total population of this country". Damage in the genetic material is cumulative and irreparable a small amount of radiation received over a long period of time having the same effect on the gonads as the same quantity received in high intensity for a short period. Radiation increases the frequency of gene mutation which may well lead to an increase in hereditary disease both physical and mental.

In addition to natural background radiation, artificial sources from which the body may receive radiation are luminous dials of watches and clocks, shoe-fitting machines, fall out products from nuclear explosions and from the atomic generating plants. The amounts received from all these are at present extremely small but a large source of radiation to which an ever increasing number of the population is being exposed is diagnostic radiology. The examinations which result in large doses to the gonads are those of the lumbar spine, pelvis and hips and urography. According to Ritter *et al* (1952) the skin dose received taking each film during a urogram is 1·3 r. to 3·6 r. in T.F.D. using 1 mm. Al. added filtration. Under similar conditions the skin dose received during a single lateral examination of the lumbar sacral joint is 2·6 r. The amount received by the testes would be less than this and the amount received by the ovaries

[illegible] These amounts will vary according to the size of the [illegible] factors such as the type of unit the filtration the [illegible] the type of films and screens the milliamp-second [illegible] the processing technique

Whether during diagnostic examinations in the past patients have received quantities of radiation sufficient to damage the gonads is hard to estimate, but, in view of our present knowledge there can be no doubt that every effort should now be made to reduce the risk of this happening

Without any additional or expensive equipment or appreciably adding to the time taken on each examination there are three simple means by which the amount of radiation received by the gonads can be reduced to a negligible quantity These are

(1) The use of a shield over the gonads in the male patient In an AP examination of the lower abdomen or spine a piece of lead or lead rubber can be used the top of which is placed on the lower part of the pubis If a half [illegible] is cut from the lower part of this shield it can be reversed and tucked [illegible] the crutch during the lateral examination of the lumbar spine Perhaps [illegible] enterprising manufacturer will market a lead suspensory bandage with [illegible] inner lining I have tried using an old lead glove but it is [illegible] and flagrant

(2) Confining the beam of radiation to that actually required by the use [illegible] cones and diaphragms Matched sets of numbered cones are available [illegible] number of the cone divided into the focal film distance gives the [illegible] field of radiation Using a 34 in FFD the No 5 cone will [illegible] whole plate film the No 4 will cut a 10 by 8 in film the No [illegible] 12 by 10 in film and the No 2 will cut a 15 by 12 in film On [illegible] when I use a 17 by 14 in film I increase the FFD to 40 in This [illegible] not only restricts the beam of radiation to the minimum [illegible] the appearance of the radiograph and is an unrelenting [illegible] the radiographer's ability to centre accurately Many modern units [illegible] with variable diaphragms and a centring device which shines a light on the actual field which will be irradiated With such aids there can be no excuse for irradiating unnecessary body areas A heavy responsibility lies on those in charge of diagnostic equipment and those who train radiographers for making sure that all radiographers understand the importance of keeping the beam of radiation as small as possible are provided with the right equipment and know how to use it

(3) Elimination of overlapping fields and unnecessary examinations For example if on examining the lumbar spine and pelvis the pelvis is taken on a 15 by 12 in film the AP (or PA) of the lumbar spine can be taken on a 12 by 6 in film using a smaller cone But if as is the common practice another 17 by 12 in film is used for the spine the pelvis will receive a second and unnecessary exposure to radiation Each department has its own routine for intravenous urography These vary from using 17 by 14 in films throughout

the examination the whole renal tract being included on [illegible] 12 by 10 in for the renal areas and examining the lower ureters and bladder on separate films of the same size. With the former technique every film taken must irradiate the gonads but with the latter technique only those films of the bladder area still put the gonads in the beam of radiation

A frequent problem for radiographers and radiologists is to decide whether to carry out the examination that has been requested or merely to do what they consider to be necessary. When an A.P. and lateral of the chest is requested provided the former is clear the latter is nearly always superfluous. Unfortunately the pressure of work in busy departments makes it expedient to do both views straight away, regardless of expense to the taxpayer or of radiation to the patient. 'Barium meal and follow through' is a common request but there is generally little possibility of the latter part of the examination producing any useful information however conscientiously it is carried out. 'Lumbar spine—A.P. lateral and obliques' is a request frequently received in some departments but in most cases where the A.P. and lateral are clear the obliques are entirely unnecessary and greatly add to the radiation hazard. Many other examples could be given but now that the hazards of unnecessary radiological examinations are known they should not be carried out or asked for as routines—only when there is some special indication.

Here is a small measure of preventative medicine that can be carried out by all medical officers—refrain from asking for extra and unnecessary views. If one leaves the details to the experts merely stating what information is required it is to be hoped that they will produce it with the least harm to the patient and he after all is the important person concerned.

Summary

Three simple methods are described of reducing radiation to the gonads during diagnostic radiography.

References

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BACTERIAL SENSITIVITY TESTS IN H M SHIPS

BY

Surgeon Lieutenant S G THOMPSON R N V R

[illegible] of the use of antibiotics by laboratory sensitivity tests is [illegible] feature in Naval Hospitals. However [illegible] to have some form of control over their use [illegible] and to minimize attendance by the patient [illegible] facilities are available several days may elapse before [illegible]

[illegible] to show that it is possible to extend the range of [illegible] the standard Bacteriological Case issued to ships [illegible] and their sensitivity tests can be carried out [illegible] extra equipment. The only item required [illegible] Petri dishes as there is usually only one pair supplied in the Bacteriological Case [illegible] size dish is too small and four inch diameter [illegible]

[illegible] this method was instituted [illegible] encouraging

[illegible] tests over a period of eight months

[illegible] 1,000 (not including cases from [illegible])

[illegible]	49 [illegible]
[illegible]	[illegible]
[illegible]	10 [illegible]
[illegible]	[illegible]
[illegible] (bacterial [illegible])	2 [illegible]
[illegible]	5 [illegible]

[illegible] —Where culture facilities are not available the [illegible] of glycerin and ichthyol in aluminium [illegible] use of chloromycetin in propylene glycol [illegible] the infection takes at least ten days to clear up [illegible] referral for specialist treatment. With [illegible] was taken at the first attendance and the [illegible] the culture was available twenty four [illegible] these cases a great variety of organisms [illegible] *B proteus* was grown most frequently with

(e) Miscellaneous — [illegible] are included [illegible] [illegible] grow [illegible]. Penicillin [illegible] [illegible].

[illegible] Discs

[illegible] culturing all the commonly [illegible]. For this purpose 25 grammes of powdered nutrient agar [illegible] distilled water and slowly [illegible]. Strictly speaking this should then be [illegible] for all practical purposes the agar solution can be kept at [illegible]. This will kill most organisms but [illegible] which case it is better to repeat the [illegible] (Tyndallisation). If Difco[1] nutrient agar [illegible] will keep the optimum pH of about 6·8. Petri [illegible] for all practical purposes by leaving them [illegible] hour. When they are [illegible] depth of about 4 mm and left to [illegible] until required for use. If [illegible] with condensation they [illegible] thus the glass and also the [illegible]. If there are not enough Petri dishes [illegible] ordinary medicine [illegible] used to store the agar [illegible] resistant to extreme [illegible] used in bacteriological [illegible]. Until required for use the [illegible] a fresh supply of [illegible]. These precautions must be taken [illegible] to prevent contamination [illegible] cultivating the majority of organisms [illegible].

The [illegible] evenly over the surface of the [illegible] the plate as an even [illegible] of colonies in the [illegible] is present one may be [illegible] readings obtained in [illegible].

For [illegible] tablets are preferable (Sentest [illegible]) [illegible] not available prepared [illegible] with the antibiotics as described by [illegible] and Burn [illegible] however are relatively cheap and [illegible] satisfactory. If [illegible] it is suggested

[1] Difco [illegible] British [illegible] by Oxo Limited [illegible] equally effective — Ed.

that they be prepared for penicillin streptomycin, chloromycetin aureomycin and terramycin and sulphonamides should be included. The filter paper discs should be tinted to distinguish them; cotton dyes should preferably be used for the dye but if any other dyes are used it is essential that they do not have any bacteriostatic or bactericidal action of their own, otherwise false readings will be obtained. The discs can be stamped out with an ordinary office punch and should be sterilized in dry heat.

With the standard preparations used for therapeutic administration the required antibiotic solutions are made up in distilled water. The solutions are made up so that each disc contains the following concentration of antibiotic:

Penicillin	1 unit
Streptomycin	10 microgrammes
Chloromycetin	25 microgrammes
Aureomycin	50 microgrammes
Terramycin	10 microgrammes
Sulphonamides	2 microgrammes

1 ml. of the solution is then added to each bottle of 100 discs and as the whole of this volume is absorbed it can be assumed that each disc contains approximately 0·01 ml. of the solution. Therefore the solutions are made up so that 1 ml. contains 100 times the amount of antibiotic listed above. As all the antibiotics issued for therapeutic use are issued in capsules, tablets or powders in weighed amounts the solutions are not difficult to make up accurately.

After the agar plates have been inoculated with the swab one of each test disc representing an antibiotic is laid on the agar at equal distances around the circumference. If 'Scantists' are used the tablets are laid on the agar in a similar manner; they adhere well and will not fall off when the plate is inverted. Although not coloured the tablets are numbered which assists in subsequent identification.

The Petri dishes are then inverted and incubated at about 37° for about four hours. Virtually anything will do for an incubator a biscuit tin containing a shaded electric light bulb is perfectly satisfactory and a little ingenuity will ensure that the temperature is kept reasonably constant. The plates are taken out of the incubator after twenty four hours and the test disc with the greatest clear area around it indicates the most suitable drug to use in that particular case.

Various modifications are possible with this basic method. The agar can be enriched with dextrose or peptone for instance. Haemolytic and non haemolytic streptococci can be grown and differentiated if blood agar is used; strictly speaking defibrinated horse blood should be used but human blood (either ovalated or citrated) has been found perfectly satisfactory. This should be used in the proportion of 8 per cent. and should be added to the warm liquid agar and not hot agar otherwise baking will occur. This blood agar is

[illegible]

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[illegible] Surgeon Rear Admiral S. G. Weldon, C.B.E., Q.H.S. [illegible] article to Surgeon Commander Campbell Watson [illegible] S.B.P.O. (T.) G. Weldon and [illegible] R. A. Penney for [illegible]

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A DENTAL OFFICER'S DIARY OF THE CRUISE OF H.M.S. *SHEFFIELD*. AMERICA AND WEST INDIES STATION

October 1953 to October 1954

BY

Surgeon Lieutenant-Commander (D) J D O RUTTLEDGE R N

September 1953 Sailed from Portsmouth for Invergordon There joining up with H.M.S *Vanguard Eagle* and other ships of the Royal Navy we sailed north to rendezvous with other ships of the United States and Canadian to take part in the N A T O Exercise Mariner Bad weather persisted throughout most of the Exercise and both whalers were lost over the side and some of the aerials were damaged During this period work continued in the dental department with the exception of two days when the ship was rolling too heavily for the loose glassware and trays and all breakable articles had to be stowed away The equipment stood the test of bad weather and no damage or breakage occurred

7th October 1953 Sailed from Greenock for Bermuda arriving there on 15th October With us returning from a visit to England was H E The Governor of Bermuda accompanied by his aide de camp

17th October 1953 Sailed for Trinidad arriving on 21st October at Port of Spain The following morning *Superb* arrived and the flag was transferred to *Sheffield*

30th October, 1953 Sailed from Port of Spain and returned to Bermuda where the ship was repainted and the Royal Guard trained for the visit of Her Majesty the Queen and His Royal Highness the Duke of Edinburgh at Kingston, Jamaica While at Bermuda I visited the civilian dental surgeons under contract to the Admiralty who undertake dental treatment for the shore based personnel entitled civilians and dependants and I visited small ships in the absence of the Flag Ship from Bermuda My next visit was to the U S Navy Station and the dental clinic where I met the dental officers on duty The dental clinic is situated in the hospital It contains two surgeries and a laboratory fitted with the standard S S Whites equipment The U S N dental officers visited the ship and were impressed with the dental surgery the Philips Orthex X ray particularly interested them

16th November 1953 Sailed from Bermuda for Kingston Jamaica arriving on 20th November While at Kingston the dental officer at the British Military Hospital called He was most helpful during our time on the station undertaking all our prosthetic work thus easing one of the problems of the station

When the ship was away from Jamaica, dentine work was sent to him by air mail. He also handled any dental problems the small ships had during the time they were on their own.

26th November. Her Majesty the Queen and His Royal Highness the Duke of Edinburgh arrived at Montego Bay, Jamaica, by air from Bermuda and drove to Kingston where they stayed at Government House. That evening a reception was given in their honour by His Excellency the Governor and Lady Foot, and I was amongst those officers invited from the ship. The reception was held in the grounds of Government House and the entertainment consisted of Native Dancing, followed by the Beating of the Retreat by the Royal Marines from HMS *Sheffield*. At the end of the evening Her Majesty accompanied by His Royal Highness strolled through the grounds amongst her subjects.

27th November. Her Majesty and the Duke of Edinburgh were on board the *Gothic* which sailed that afternoon accompanied by *Sheffield* as the escort ship, bound for Panama.

29th November. Arrived at Colon, where Her Majesty and the Duke of Edinburgh went ashore. *Sheffield* continued through the Panama Canal arriving at Balboa that evening. Her Majesty drove from Colon to the Miraflores Lock where she went aboard the *Gothic* and continued her journey to Balboa.

30th November. The *Gothic* with Her Majesty on board sailed from Balboa escorted by *Sheffield* and headed into the Pacific. That afternoon we turned off the trade route and stopped. Hands fell in for Divisions. Her Majesty accompanied by His Royal Highness the Duke of Edinburgh came on board and inspected Divisions. Senior Officers were presented to Her Majesty and HRH Royal Highness who then returned to the *Gothic* and we resumed the long journey across the Pacific.

4th December. Reached the equator and the crossing the line ceremonies were held on board *Gothic* and *Sheffield* watched by Her Majesty and the Duke of Edinburgh. During the ceremony one of our Petty Officers got two teeth knocked loose. These were removed and re-planted and splinted in place. The operation was successful and the man still has those two central incisors.

10th December. Returning the *Gothic* we reached the Marquesas Group of Islands where we were to say goodbye to Her Majesty and His Royal Highness. The escort from there on was taken over by HMNZ *Black Prince*. On board *Sheffield* the order was received from Her Majesty to 'Splice the Main brace' and a general make and mend was given. We had now started our journey back to Panama. During the time we were escort ship there had been no serious dental problems either in *Gothic* or in *Sheffield* and routine work was the order of the day. Inspection of the dental conditions of the ship's company had been difficult due to Exercise Manuel and preparations for the arrival of Her Majesty in Jamaica, but this was completed during our time in the Pacific.

11th December. Called at Nuku Hiva, a small Pacific Island in the

Marquesas Group about 500 miles from Tahiti It is a beautiful little island untouched by progress and the natives are Polynesians The island is French territory and garrisoned by a Resident French Officer The whole population consists of the Resident Officer and his family a gendarme a school teacher and a Scotsman who runs a trading post The currency is French but the natives barter food and have no use for money Once every three months a ship arrives from Tahiti with supplies and collects the copra Life is easy and peaceful on this paradise island which does not even have a road That evening the natives put on a hula hula dance in our honour It was the real dance and not as put on for visitors in other islands The dance leader was a man of 82 years dressed from head to foot in a grass costume resembling the straw covers used for bottles The dancers wore the conventional grass skirts At one time these people were cannibals and it is only sixty years ago since the last visitor went in the pot The old dancer leader told us he remembers when the last person was cooked and eaten When *Sheffield* sailed that evening many grass skirts were to be seen on board.

23rd December Arrived in Rodman U S Naval Base Balboa after an uneventful voyage By this time it was 97 days since we left Portsmouth and we had covered approximately 20 000 miles We spent Christmas and New Year at Balboa where we were warmly welcomed by the U S Navy Army and Civilians Both officers and men were taken out and entertained and all service facilities were put at our disposal and friendly skeet shooting competitions were organized between the ship and the local Army Balboa is the American City and runs into Panama City It is a combination of old and new very go-ahead and very expensive During Christmas the whole city was illuminated and the houses in the residential areas were framed in coloured lights giving the area a toyland atmosphere of gaiety Panama has its own University built in recent years It is a beautiful tall modern building constructed somewhat on the lines of the United Nations building in New York Classes are held at night as well as daytime to enable those who have to work during the day to study during the evenings Previously medical and dental students went to the United States or South American Universities Great interest was shown by the Panamanian dental surgeons in the Philips Oralix X-ray as well as the general equipment of the surgery In Panama the dental products of both Britain and the U S A are used In many cases our type of extraction forceps are preferred to the Reed type commonly preferred in America Another preference for British was in direct plaster filling materials Some Panamanian dental surgeons subscribe to the B D A as well as their own society and of course a number also belong to the American Dental Association During our stay in Rodman Navy Base I met the U S N Dental Officers and visited the dental clinic The clinic as in most U S N Bases is situated in the hospital building It has 5 surgeries and a laboratory capable of undertaking all types of prosthetic work The laboratory had a staff of two technicians a Chief Petty Officer and a Corpsman both of whom had done courses at Bethesda Naval Hospital Maryland Bethesda is the Navy's famous hospital

and research centre. The Senior Army Dental Officer at Fort Kobe, situated a few miles from the Navy Base, called on board to see me. He was most interested to see the new British equipment as prior to re-enlisting in the U.S. Army he had been in private practice in Barbados and had used all British equipment there. Later I visited the dental clinic in the Army Hospital at Fort Kobe, consisting of one surgery and a laboratory. There are other dental clinics in the Canal Zone but they were not close enough to Balboa to be easily visited.

8th January 1954. Sailed from Balboa for Colon where the Commander-in-Chief rejoined the ship and we sailed for Curaçao arriving on the morning of 11th January. There we were entertained by Officers of the Royal Netherlands Navy and Officers of the Dutch Shell Oil Company.

13th January. Sailed for Port of Spain, Trinidad. This time it was our fourth and last visit to the island. I was visited by one of the dental officers of the U.S. Naval Station outside Port of Spain. He was most interested to see our surgery. A hunting expedition was organized for us in the swamps. It was good sport but hard work. Trinidad is a hunter's paradise with every form of wild life from alligator to vampire bats. After an all too short visit we said good-bye to our friends and sailed on 19th January for Grenada, arriving that evening.

20th January. Lay at anchor in the bay off St. Georges, Grenada. In many ways St. Georges resembles a Cornish fishing village in appearance. I met the only British dental surgeon in Grenada and the suggestion was approved by the Commander-in-Chief that his name be added to the local list of civilian dental surgeons under contract in the Navy. This would ensure that patients from small ships receive a reasonable standard of treatment at reasonable fees.

23rd January. Sailed for Barbados arriving at Bridgetown the capital that afternoon. Bridgetown is so called because of the number of bridges connecting various parts of the town together. While at Barbados we were entertained at Government House as well as privately.

29th January. Arrived at Antigua and lay at anchor in the bay. It is a very small island with little attraction for visitors. As a heavy swell came up we had to sail a day ahead of schedule and were unable to hold our usual reception on board.

4th February. Arrived in Kingston, Jamaica, to refuel and sailed the following afternoon for Cuba.

8th February. Arrived at Havana, Cuba, for a four-day visit. This was the high light of the Caribbean Islands cruise. Havana is a mixture of old and new riches and poverty. The buildings still show scars of the last revolution. It is a wide open country where all vices are catered for legally and gambling is on quite a scale. The world's most fabulous night club "La Tropicana" is located in Havana. It takes up a whole city block and consists of both indoor and outdoor night clubs, ballrooms and casinos as lavish as any Monte Carlo could boast. We visited the tobacco factories and the new TV Station. Our press relations officer appeared on TV here and this became part of the

regular [illegible] only in ports of the United States In most North American ports the Commodore has also interviews on TV Cuba is an expensive place for visits and we were restricted also in how much we could change into dollars I was unable to meet the Cuban naval dental surgeon at naval headquarters but the surgery is fitted up on the pattern of the US Navy The Cuban naval headquarters was guarded by so many sailors armed with sub-machine guns that visiting there seemed to be risking one's life and putting one's hand in a pocket for an identity card was a thing to be done cautiously

15th February Arrived in Vera Cruz Mexico Vera Cruz is the port for Mexico City It is a typical Spanish town with the square in the centre and the streets opening out from it The square is the centre of their social life Mexico is still a wild country and armed bandits on horseback are quite common in the country outside the cities Here the "Wild West" still lives on and the ranchers can be seen sometimes in the towns in cowboy dress and wearing a gun Although we met officers of the Mexican Navy at Vera Cruz no dental officers were there and no professional contacts were made

25th February Visited New Orleans Louisiana for Mardi Gras having sailed up the Mississippi river Mardi Gras lasts for about ten days and during that time everyone goes mad Cafes and bars and cabarets stay open round the clock A lot of drinkage is done in the town but festivities bring in millions of dollars Many undesirables from the other 47 States make for New Orleans which is a wide open city especially at this time Most officers were invited to one of the Balls which is considered a great honour and offered seats on the balconies to see the floats pass by in the processions Visits were paid to the world famous spots of New Orleans such as Antoine's for dinner and the honky tonks of Bourbon Street where painless extraction of the dollar has become a fine art Another famous place in this city is Pat O Brien's Bar where drinks are served in an old world Patio During the last day of Mardi Gras there were something like 140 automobile crashes over 200 drunks in jail and 2 bar room shootings (one of which was witnessed by some of the crew of *Sheffield*) in which a man was killed Thus ended another carnival season in New Orleans There was no opportunity of making Service contacts during this visit as the Service establishments are situated around Algiers on the other side of the river

5th March Reached Galveston Texas where we stopped to pick up the pilot and representatives of the press and TV systems We then proceeded up river to Houston As we passed up stream the odour of sulphur was plainly noticeable from the water it is due to the deposits from the chemical and other countercurrent plants along both banks At one point on the left hand bank can be seen the San Jacinto Obelisk and the old battleship *Texas* which is now a Texas State memorial and museum These we were to visit later We arrived at Houston in the evening and tied up alongside the 76th Street wharf Shortly after arrival people called on board offering to take both officers and men ashore Texas hospitality is no exaggeration and we were

swamped with invitations [illegible] and dinner to free theatre seats Crowds came down to see the [illegible] Bristol to take us anywhere we wished to go [illegible] even offering [illegible] during our visit Houston is a fast growing modern city [illegible] with modern highways running through it One of the [illegible] is the fabulous Shamrock Hotel [illegible] approximately 21 million dollars to build This hotel was started by oil millionaire McCarthy but he went bankrupt before it was completed Although Houston is not as expensive town as American cities go it boasts [illegible] 400 multi millionaires amongst its top citizens During the visit I was made [illegible] member of the Houston Petroleum Club It is a beautiful club situated on the penthouse of the Rice Hotel from which you can look out over the entire city The walls are hung with colour photographs of past [illegible] of the club and these photographs are unusual in that they are printed in leaflet instead of paper and give the appearance of being portraits in oils When the time came to leave the 'Lone Star State' we were sorry to go The wharf was packed with people to see us off and as we shipped out the band played Deep in the Heart of Texas and the cheer that went up from the crowd could be heard for miles

March Arrived in Pensacola Florida and tied up alongside at the Naval Air Station Pensacola is a huge airfield where pilots undergo flying training and where many of our pilots as well as those of other countries complete their training In the Navy Pensacola has acquired the name of Wings of the Air We met a number of RN Officers who were under training there and at other training fields in the States Both the American Officers and the RN Officers under training held receptions for us and of course before leaving we gave our usual reception on board I was shown round the dental [illegible] nice and sunny building housing about 12 dental officers in comfortable well lighted surgeries I attended a reception given for Rear Admiral Daniel W Ryan (DC) USN Chief of the Bureau of Medicine and Surgery Dental Division. Admiral Ryan and Captain J McKee (DC) USN visited the ship and inspected the surgery The Admiral was greatly interested in the Oralix X ray apparatus and mentioned that it might be a useful addition to their ships equipment The Oralix X ray caused a lot of interest practically every where we went in the USA During our stay we visited Pensacola City San Rosa beach and Mobile Alabama. Pensacola is about five miles from the Base and is a quiet little town with a couple of good hotels and nice shops It depends mainly on the Naval Base and tourists San Rosa is the beach near Pensacola It is on an island connected to the mainland by a bridge There is a beach club at the end of the bridge otherwise the natural beauty of the beach has been left untouched On the trip to Mobile Alabama we drove to the Florida State line where we stopped at the reception station a nice modern building for purpose of helping and advising visitors to Florida. They provide maps postcards and booklets of Florida on request and serve the thirsty motorists with free fresh Florida orange juice From there we drove into Alabama and on to Mobile a clean modern city We had a look at the city had dinner

at the Admiral Semmes Hotel and returned to Florida [illegible] on stay at the Southwest State

20th March Arrived at Belize in British Honduras [illegible] at anchor Belize is a small town comprised mostly of wooden buildings The country is primitive and little seems to have been done to open it up That evening we were entertained at Government House where we met the Officers from the Army Garrison who had arrived there shortly before our visit Before leaving four of us went on a hunting trip inland This was most successful and we were able to see some of the country which we would have missed otherwise

25th March Anchored off Grand Cayman Island the largest of the group It is a sandy island with little vegetation other than scrub and palm trees A visit to the local hotel was our only amusement

27th March Arrived at Montego Bay Jamaica, where we spent the week end It is one of the expensive holiday resorts of the Caribbean and also the airport for Jamaica As is usual in this area Montego Bay is a contrast of luxury and poverty On one hand is seen the costly tourist hotels and on the other the shacks of the coloured Jamaicans

29th March Arrived in Kingston This was our third visit here and by now we were well known Our friends were waiting to see us and we were invited to dances and beach parties Calls were exchanged with the Senior Army Dental Officer at the British Military Hospital Before leaving we gave a farewell dance on board It was a successful evening and we were all sorry that we would not be visiting Jamaica again

7th April At Sea Dawn to dusk Action Stations with action messing and night encounter exercise The Royal Marines made a landing on Turk Island

10th April Arrived in Bermuda followed by *Burghead Bay* On arrival I received the news that Mr Storey Gare one of the civilian dental surgeons under contract with the Admiralty had returned to England for health reasons This made dental treatment for shore based personnel dependants and entitled civilians in Bermuda more difficult to obtain in the absence of the Flagship The small ships visiting Bermuda in our absence would also find it harder to obtain dental appointments The fees in Bermuda are very high and dental surgeons were overworked which makes it difficult to find a practitioner willing to undertake a naval contract The Army about this time had arrived back in Bermuda and although their numbers were small this did not help matters as they also were looking for dental facilities We did however what we could to help HM Ships *Burghead Bay*, *Cygnet Bighury Bay* and HM Submarine *Tally Ho* Personnel of these ships were examined and treated as far as possible and visiting ships of the Royal Canadian Navy were afforded dental facilities Otherwise dental practice continued as usual The Orahx X ray was invaluable not only to me but also to the medical officer Several times it was used to X ray accident cases for possible jaw fractures broken fingers and noses The Sick Bay X ray apparatus did not seem to be too satisfactory and for quite a time was out of commission completely There was one person in Bermuda who went out of his way to entertain the fleet Major Bill Cookson

a retired Army officer from World War I who has been living in Bermuda for many years. He built a club in the grounds of his house which he called the Bloody Sailor where he used to entertain. It is like a naval museum, decorated with uniforms and ship fittings from every Navy that has ever been in Bermuda. He has been doing this for about ninety-eight years.

17th May. Arrived in Norfolk, Virginia and tied up alongside in the Navy Yard, an immense Naval Base with a very large U.S.N. airfield adjoining it. This is the headquarters of the 6th Naval District as well as S.A.C.L.A.N.T. and other N.A.T.O. Organizations. There were four battleships and as many large carriers in commission, in addition to hundreds of smaller ships ranging from light carriers down. Calls were made and returned on the Senior Dental Officers of the Base. The main clinic is a large building accommodating 49 dental officers, corpsmen and laboratory technicians. Here every form of treatment is undertaken, from oral surgery to routine dentistry, many officers specializing full time in their own particular sphere. There is also a smaller clinic on the airfield. Breezy Point Naval Station accommodating about 12 dental officers.

My American colleagues did all in their power to make my stay pleasant. I was taken to their homes and to the Officers' Clubs and for tours in the country. One of the show places in this district is a town called Williamsburg which has been maintained in its original colonial design and the period dress is worn to complete the picture for tourists. To visitors it feels almost like stepping into the past to see it as it was in the days of the Civil War.

24th May. Anchored off Annapolis, Maryland, a picturesque little town famous for the U.S. Naval Academy. We visited the Academy but as it was it's end of term we did not meet the officers. It is a fine building in lovely grounds with all possible recreational facilities for the students.

26th May. Arrived in Baltimore, Maryland, accompanied by *Burghead Bay*. Baltimore is in ways more like an English city than most American cities. Here we visited the John Hopkins Hospital and the famous Bethlehem steel plant. We were entertained by the U.S. Army, the English-Speaking Union and the Police, as well as by private individuals. The people of Baltimore were most hospitable and did all they could to make our visit enjoyable. The Baltimore Savings Bank was celebrating its centenary and we were invited to visit it. We were shown a million dollars in bills and before leaving were presented with a map of Baltimore as it was a hundred years ago.

28th May. I left Baltimore by car for Washington D.C., a distance of about 50 miles to visit Admiral D. W. Ryan (*D.C.*) U.S.N. I visited the Bureau of Medicine and Surgery (Dental Division) and met the officers. I was introduced to Rear Admiral Ralph Malone (*D.C.*) U.S.N. then Deputy Chief of the Dental Corps and who has since succeeded Admiral Ryan. The next day I was shown over the White House and toured the city afterwards. I saw the usual sights, the Pentagon, Capital Buildings and the Lincoln Memorial. Washington is a clean city with wide thoroughfares and in some ways resembles parts of London. Every nationality and race can be seen there and during my

visit [illegible] Abyssinia who was visiting the President *Sheffield* gave an official reception before our departure

4th June We arrived in Bermuda accompanied by HMS *Cygnet*, and the following day HMS *Ben Lomond* arrived on a two day visit

1st July Moored from the Dockyard to Hamilton is not there to be guarded ship for the Rhode Island Bermuda Yacht Race the year's great yachting event

8th July Arrived at Newport Rhode Island the last port of our summer cruise Newport is an old world town and not at all like the modern American city Most parts of it are old fashioned with narrow streets and the colonial type buildings

14th July Arrived in Portland Maine and berthed alongside Portland is a small pleasant city of modern design Maine is one of the vacation areas of the US Its northern boundary is on the US/Canadian border adjoining the province of New Brunswick and it has the same beautiful rugged scenery found in Canada It is one of the best hunting and fishing areas of the east coast The highlight of our visit was a dinner and dance given by Bette Davis and her actor husband Gary Merrill who live outside Portland

22nd July Arrived at Gaspe Province of Quebec a small lumber town and port consisting largely of wood buildings and dirt roads The language spoken is French but most people have some knowledge of English Strangely enough in practically an all French area, the mayor was an Englishman named John Reid A visiting warship is an event in Gaspe and we were well received and taken care of during our stay A dance and fishing trips were organized for us and we were invited to homes The weather was bad the whole time we were there raining every day and apparently it had been doing so for six weeks before our arrival this turned the dirt roads into lakes of mud I went by car with the Commander and the Principal Medical Officer to visit a resort by holiday resort and fishing port called Perce but the weather was too bad to do much sight seeing One evening a few of us were invited to a birthday party in a hut at a logging camp a few miles out of Gaspe It was a new experience for us and we enjoyed the novelty of it The PMO and I visited the Sanatorium a beautiful modern building on the hill behind the town but unfortunately I was unable to meet the dental officer who was on vacation In spite of the weather we were sorry to leave this friendly little town

28th July Arrived at Montreal and tied up alongside This is the first large Canadian city we visited Almost on arrival I met Surg Cdr T Barry RN Reid who having retired from the Royal Navy has settled in Montreal and is working in Montreal General Hospital as Director of the Out patients Department Next day I visited the dental clinic where the Chief Dental Officer showed me round It is a large clinic housing 48 dental chairs separated by partitions in a long room after the style of a teaching hospital The equipment was of the usual S S White pattern more or less a standard equipment in clinics both Service and civilian in North America My next visit was to

Queen Mary's Hospital. The dental unit in this hospital is smaller than the one in Montreal General. A new hospital has been built on the outskirts of Montreal and the staff will move to it before the building on completion.

I went to see McGill University but unfortunately it was at the Summer vacation period. However I saw some of the classrooms and the library. The architecture is similar to that of English Universities, old stone buildings with ivy covered walls.

The PMO and I spent the August Bank holiday weekend in the country at a village on Brome Lake, about 80 miles from Montreal. The weather was good and the scenery lovely and although the water was too cold for swimming we were able to take the canoes out on the lake. On the Sunday we went to the next village Knowlton to see the Horse Show and Rodeo. We saw cowboy competitions ranging from bareback and there was an old stagecoach which took people for short trips the proceeds of which went to the local hospital. In all a most enjoyable weekend.

Near Montreal there is a large Indian reservation. The Indians up here are one of the Iroquois tribe, the only tribe that was really organized in the old colonial days. One day the Chief, Chief Poking Fire, with his family called on the Commodore of HMS *Sheffield*. The Commodore was dressed in a buffalo skin blanket and given a tomahawk. He smoked the pipe of peace with the Indian Chief and his family. Then Chief Poking Fire presented him with a Red Indian name and renamed the ship. After this the Chief and his family returned to the reservation.

The Indians are wards of the U.S. and Canadian Governments. They are provided for but can work if they wish. They can travel where they wish without passport and pay no taxes even if they are working. They have very good schools for heights and make fine steel erectors on big construction projects.

5th August. Arrived in Quebec City and lay alongside. Quebec is a contrast to Montreal being built in the old style with narrow streets. It is very French and the population is 100 per cent French speaking whereas Montreal is about 70 per cent. Quebec might be described as quaint. The Chateau Fontenac is very fine. About the town. The Chateau Fontenac, the Heights of Abraham and Montmorency Falls were visited during our stay.

The Naval Base is a reserve training establishment and the dental department is well fitted, two surgery clinic with its own laboratory. However owing to the shortage of dental officers and technicians there was only one dental officer and prosthetic work was sent to the central laboratory in Montreal.

The Royal Yacht *Britannia* arrived in Quebec near the end of our visit to await the arrival of His Royal Highness the Duke of Edinburgh who was at the Empire Games in Vancouver and before we sailed His Excellency the Governor-General of Canada Sir Vincent Massey gave a reception for us.

13th August. Arrived at Corner Brook Newfoundland. Corner Brook is a paper mill town on the west coast of Newfoundland and headquarters of Bowaters paper mills. Until recently it was the largest paper mill in the world.

It is st[illegible] further country a small town dependent on the mill [illegible] and controlled by it We were entertained by Bowate[illegible] important members of the community We [illegible] will went skeet shooting on their range The only [illegible] in Carmichael to make for yourself but it is a nice community and a beautiful country with good fishing hunting and golf course There is a small reserve RCN Base and about twenty miles away there is a US Air Force Base

19th August Sailed round Newfoundland to the capital St. Johns a picturesque old town built on the hillside around the harbour There is no naval base in St Johns now and the only Service establishment is a US Air Force Base a few miles out of the city We were made honorary members of the Officers Club for the duration of our stay Calls were exchanged with the USAF dental officer who was most intrigued to see a ship's surgery It was his first visit to a warship and he enjoyed every moment on board

As a whole Newfoundland is a wild underdeloped province with plenty of good timber forests The main industry was dried fish but this has fallen off badly in latter years Roads are bad and in many places there are only dirt roads and even now there is no highway across the island the centre of which is swamp and forest The only transport from one side to the other is by rail or sea Newfoundlanders have in many ways retained their Irish characteristics and even the accent and terminology is similar to the Irish of today

27th August Arrived in Halifax Nova Scotia and tied up in the Dockyard That evening we were invited to the opening of the new Officers Mess in HMCS *Stadacona* where we met the Command Dental Officer and some of his officers

The following day I visited the dental department in *Stadacona* a well designed clinic on the second floor of the Sick Bay capable of housing ten dental officers and containing a first class laboratory capable of undertaking any kind of prosthetic work including the necessary apparatus for casting Tientium The equipment used by the RCDC is the usual S S White's and the surgeries are well equipped with modern apparatus

HMCS *Magnificent* was lying astern of us and I called on the dental officer The surgery is the same as in other light fleet carriers and is well fitted with unit equipment and the Castle shadowless lamp The X ray apparatus is the General Electric full size wall model The store cupboard top was fitted as a work bench but no dental technician was borne

Halifax is not a very attractive city and a lot of it is old Across the river is Dartmouth where the RCNAS *Shearwater* is situated The river is crossed by ferry but a bridge is under construction Several unsuccessful attempts have been made to bridge the river and the Indian superstition is that all attempts to build the bridge will fail So far it looks as though the bridge will be completed this time but up to date five workmen have been killed

1st September Arrived in St John New Brunswick Later we were joined

[illegible] We were made temporary members of the Navy Officers Club and the Union Club and were lunched by the Mayor [illegible] and the bicentenary of [illegible]

St John [illegible] good shops and hotels A few miles [illegible] "Reversing Falls" reputed to be the only ones of their kind in the world [illegible] both ways at the same time [illegible] is high

Her Royal Highness the Duchess of Kent and Princess Alexandra were [illegible] St John at this period [illegible] scheduled [illegible] ship by the Prime [illegible]

[illegible] last port of call [illegible] sailed South for [illegible] U S A once more

[illegible] September We arrived at [illegible] Massachusetts and tied up along [illegible] U S Army Base in South Boston Boston is one of the large [illegible] and a large bustling city It is an historic city yet [illegible] with the night life and bright lights associated with the cities of [illegible] New World The architecture is both old and new, some dating back to [illegible] British days Such places as Kings Chapel and Burial Ground still exist [illegible] Christ Church The Old North Church where Paul Revere displayed the [illegible] lanterns on the steeple to warn people of the march of the British to [illegible] and Lexington is still preserved Here in Boston is the U S A's oldest [illegible] Harvard Here also can be seen Paul Revere's House Boston Navy [illegible] has the old U S S *Constitution* familiarly called Ironsides, and the [illegible] to the Battle of Bunker Hill

[illegible] our stay we were entertained by H B M Consul General the officers [illegible] U S Navy and Army and private individuals and the facilities of their [illegible] extended to us

[illegible] the U S Army Dental Clinic which was smaller than usual and [illegible] only two officers both of whom were doing their National Service and a nurse trained as a hygienist Dental hygienists have to be hospital trained and qualified even in the Services and I understand the course takes four years to complete This was the only place I found a hygienist employed in the Services The American dental officers returned my call and offered every assistance during our visit

While in Boston I took long week-end leave and went to stay with friends in Portland Maine I travelled by train to Portsmouth New Hampshire where I hired a car and drove the rest of the way north on U S Highway 1 which runs from Florida north to Montreal I picked a bad week-end as warning came of a hurricane approaching which was due to reach Portland the following day This was the second hurricane in less than two weeks All day Saturday we had heavy rain and high winds and on the Sunday the hurricane causing great damage and a number of casualties and flooding parts of the town

The [illegible] of wreckage behind it up the [illegible] to Portland and then [illegible] itself out. On Monday [illegible] and back to the [illegible] in a sheltered harbour had [illegible] and we sailed next day.

14th September. Sailed into Lower Bay and up the Hudson River between Brooklyn and Staten Island. Your sailed up river we passed Governor's Island Ellis Island the Statue of Liberty and the Battery on the south end of Manhattan Island and entered the North River with Manhattan on our starboard and New Jersey on the port side. On our way up river we passed over the Holland and Lincoln tunnels connecting Manhattan and New Jersey and proceeded to Pier 90 the Cunard berth.

Sailing into New York is a beautiful sight particularly at night when all the buildings are lighted. From the ship the Manhattan skyline is most impressive with the well known skyscrapers the Woolworth Building the Empire State the Chrysler Building and the Rockefeller Center easily recognizable. This is the centre of New York City which comprises Manhattan Bronx Brooklyn Queens and Staten Island. We were met by Cunard officials newspaper men and customs officers. Representatives of different organizations met us with offers of tickets for Broadway shows and concerts and radio and TV shows at Radio City. In the New York Yacht Clubs midtown club there is the Royal Naval Club of New York where a reception was given for us. The members are both British and Americans who have served in the Royal Navy.

Her Royal Highness the Duchess of Kent and Princess Alexandra were visiting New York at this time. They visited the ship one morning and inspected Divisions. Afterwards the officers were presented to their Royal Highnesses. *Sheffield* gave a Reception on board to say goodbye after a wonderful if rather hectic visit to New York and we sailed for our last port of call in America.

23rd September. Arrived in Philadelphia Pennsylvania the "City of Brotherly Love". Philadelphia is a big modern city and one that has a prominent place in American history. It was here that the Liberty Bell rang out the news of the end of the war of Independence. Here Betsy Ross designed and made the first American Flag. Her house is preserved and can still be seen. The city was founded by William Penn and his statue towering above the city faces towards the oak tree where he negotiated with the Indians for the territory.

There is a large U.S. Naval Base in Philadelphia and we berthed alongside in the Dockyard. I visited the District Dental Commander and the Commanding Officer of the dental section of the U.S.N. Hospital. It was intended to return to the hospital next day to meet the specialist in Dental Surgery and see their cases.

The following day at the hospital was most interesting and I met Commander Roy Hohnsch (*D.C.*) who does all the oral surgery in the Naval district. Commander Hohnsch has kept records of all his cases not only on paper but by slides and colour films as well. I spent several afternoons at the hospital looking through the photographic records and X ray plates and I saw some of his cases

[illegible] He had three cases in the [illegible] from car accidents all [illegible] fractures of the zygomatic [illegible] comminuted fracture [illegible] wall. His method of treating those [illegible] and appeared to give [illegible] comfort to the patient [illegible].

The operation is performed under general anaesthesia. Entry to the antrum [illegible] through the buccal sulcus which [illegible] in the injury. Sufficient [illegible] fragments are removed to allow the entry of one finger in [illegible] to press the fractured wall back into place. Then a Foley's catheter is inserted into the antrum and the latex bulb inflated to hold the fragments in place. The inflated bulb will conform to the shape of the cavity. The average sinus required approximately 20 c.c. of air in the bulb to hold the fragments in their proper position. The rubber tube is then brought up and attached to a head band or the cheek by adhesive plaster and the mucous membrane sutured round the tube. The patient is left for about three weeks with the catheter in place. The advantages of this method are that the tube is used to wash out the antral cavity; when the time comes to remove it, the latex bulb is punctured with a sharp probe and withdrawn from the sinus and the hole in the buccal sulcus is sutured. There are no unpleasant gauze dressings to be changed and the patient is completely comfortable all the time.

Another interesting case was that of a coloured woman who had a perforation of the hard palate resulting from syphilis. When the general treatment was [illegible] Commander Hebusch operated to close the perforation. This [illegible] platinum foil over the perforated bone, then making two lateral incisions in the mucosa of the hard palate about one inch long running [illegible] posteriorly; he drew the perforated tissues together over the platinum [illegible] sutures. The two lateral incisions healed unassisted.

Each Thursday afternoon one of the leading local civilian dental surgeons is [illegible] a lecture on his speciality at the hospital. I was invited to [illegible] lecture given by a well-known prosthodontist Dr De Van. His theory [illegible] when a tooth is removed it should be replaced with a substitute [illegible] designed that when a subsequent extraction becomes necessary [illegible] can be made to the appliance.

Another dental surgeon I met in Philadelphia was Dr Weighel, an ex R.N.V.R. dental officer who is now in the University of Pennsylvania.

From Philadelphia we sailed for Bermuda arriving there on 1st October to [illegible] ship *Superb*.

[illegible] October. H.M.S. *Superb* arrived in Bermuda to take over as Flagship [illegible] the American West Indies Station and next day we sailed for England.

26th October. H.M.S. *Sheffield* arrived back in Portsmouth at the end of a wonderful commission.

THE PERNICIOUS REMEDY OF THE NAVAL SURGEON

BY

Miss J DOBSON

For almost two hundred years there existed a sometimes uneasy co-operation between the Company of Surgeons and the Board of Commissioners for the Admiralty involving the performance of certain duties on the part of the former body One of these the result of a clause inserted into the Charter granted by Charles II to the Company of Barber-Surgeons in 1629 required that No one was to go out from the port of London to send out any apprentice servant or other person from the same port to act as surgeon to any ship whether in the service of the Crown or of a merchant unless they their instruments and their chests had first been examined and allowed by two of the Governors of the Mystery In The Sea Chirurgion published in 1695 John Moyle gives the following advice to those employed in this capacity See that the Medicines you put up are good Indeed if you go in a Man of War then the Governors of Surgeons Hall do thoroughly inspect your Medicines as well to their quality as quantity and will suffer nothing that is bad to pass And besides yourself is the Man whose Reputation must stand or fall according as your Medicines operate on the Sick or Wounded and that is another great Reason that you should look to it In the Regulations relating to Service at Sea (1730 and later editions) it is stated that after the instrument chest had been examined it was to be locked and the Seals of the Physician and of the Surgeons Company to be affixed thereto in such Manner as to prevent its being afterwards opened before it comes on board nor is the Captain to admit any Chest into the Ship without those Marks upon it

The Barber Surgeons and later the Surgeons appeared to have valued this privilege of examining the naval surgeons instruments as the two following incidents show At a meeting of the Court of Assistants of the Barber Surgeons Company held on 21st April 1715 it was announced that The Lords Commissioners of the Admiralty proposed to place the viewing of the Sea Surgeons chests with Dr Oliver and Mr Rider Physician and Surgeon of Greenwich Hospital to the exclusion of the Company's right and contrary to the Charter of Charles I and it was ordered that a memorial should be presented to the First Lord against such a proposal For eighty years no further difficulty arose in this matter but a similar attempt to set aside the rights of the Company of Surgeons was made when in 1795 the Board for the Care of Sick and Hurt Seamen was abolished its place being taken by three Commissioners Shortly after their appointment they decided to take upon themselves the duty of examining the surgical instruments and drugs carried by the ships surgeons

but on this being communicated to the Company the Court of Assistants referred once again to the clause in the Charter of Charles I and insisted on their right to retain this function

The new Charter granted in 1800 to the Royal College of Surgeons (40 Geo III) again contained a section stating that "the Examiners of the College of Surgeons hereby established shall examine all Surgeon's instruments to be used in Our Service which they shall be required in like manner to examine and shall return such Instruments when examined to such Person or Persons as shall be appointed to receive the same with such Certificate, in such Form and properly sealed up or otherwise authenticated in such manner as the Officer or Officers from time to time to be appointed by Us for such Purposes shall require

It is more than likely that this obligation had lapsed into a mere matter of routine until on 18th December 1812 the Secretary of the College Mr Edmund Belfour laid before the Court of Examiners a letter from the Secretary to the Commissioners for Transport etc enclosing a list of the Instruments required to be provided by Surgeons in the Navy and requesting the opinion of the Court as to any improved arrangement that should be made of such a list with regard to any instruments mentioned therein This list was one provided by Messrs Evans & Co, Instrument makers of Old Change, and was as follows

Three amputating Knives
One amputating Saw with spare Blade
One metacarpal Saw with spare Blade
Two Catlins
Pair of Artery Forceps
Two dozen eyed Needles
Two Tenaculums
Six Petits screw Tourniquets
Pair of Bone Nippers and Turn screw
Three Trephines
Saw for the Head
Rugine
Pair of Dressing Forceps
Elevator
Brush
Two Trocars
Two silver Catheters
Two gum elastic Catheters
Six Scalpels
Small Razor
Key tooth instrument
Blunt Lancet
Two pairs of Tooth Forceps
Punch
Two Suture Needles
Pair of screw Probe Scissors
Curved Bistory with a Button
Long Probe
Pair of Bullet Forceps
Scoop for extracting Balls
Two Probangs
Half a pound of Ligature Thread
One paper of Needles
Case with Director
Apparatus for restoring suspended Animation
Set of Pocket Instruments
Six Lancets in a Case
Two dozen Bougies in a Case
Two Pint Penis Clysmic Syringes
Two sets of bundles of common Splints
Set of Japanned Iron Splints for Legs
Twelve Flannel or Linen Rollers
Two to eighteen tailed Bandages
Twenty yards of Web for Tourniquets
Sixty yards of Tape different Breadths
A Cupping Apparatus consisting of One Scarificator and Six Glasses

After the [illegible]

That most [illegible] for receiving [illegible] *Leuthidar* [illegible] *Probe* [illegible] *Portion* [illegible] *suspected* [illegible] that the [illegible] [illegible] the

II [illegible] the

[illegible] useful [illegible]

[illegible] not [illegible]

[illegible] a [illegible] [illegible] [illegible]

[illegible] Amsterdam struck with the variety of instruments [illegible] the water were lost for want of proper treatment, that brought on shore formed themselves into a Society for the Recovery of Drowned Persons.' In the Instructions that they published they directed first to force air into the body either at the mouth or up the anus, recommending the stimulating vapour of tobacco as more efficacious than common air.

Seven years later in 1774 the Royal Humane Society was established in London as a result of the endeavours of Dr William Hawes and Dr Thomas Cogan. In the Reports of this Society published in the following year Dr Cogan gave a description of a Fumigator of an improved construction together with his 'Reflections on Fumigators and Fumigation'. Here he remarks that the injection of the fumes of Tobacco into the intestines has been universally considered amongst the most efficacious applications. It is not only the admission of a kindly warmth into the internal parts of the body which in all cases must prove advantageous but its stimulus connected with this warmth seems admirably adapted to excite irritability, and to restore the suspended or languid peristaltic motion of the intestines. It is well known, he says, that this Vital Principle being once excited to action in any one part the whole system will in most cases share in its genial effects. Dr Cogan was not the originator of these ideas for they had been recommended by Richard Mead (1673–1754) Jacques Jean Bruhier (*d.* 1756) and others but his fumigator was likely to produce better results than the ordinary tobacco pipe, though this used by investigators was stated to have been effective in many instances. Fig. 1 is

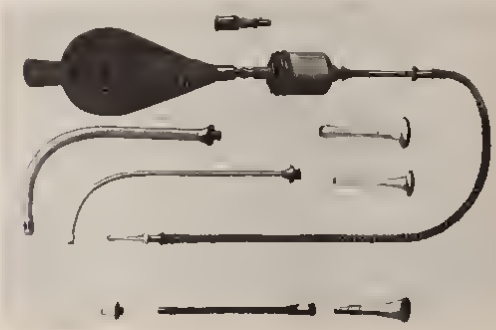

Fig. 1

a photograph of the apparatus recommended by the Royal Humane Society and was included in J. H. Swediaur's Engravings of Instruments used in the Practice of Surgery published in 1798.

Dr. Hawes, Editor of the Reports of the Society, was of the opinion that if the Navy could be regularly supplied with tobacco-smoke apparatuses many lives would be saved, and he expressed the hope that the presence of [illegible] lives endangered both on the ocean and in more public situations would recommend it powerfully to the Attention of the Directors, [illegible] to present their apparatus to Navy Surgeons, and thereby be instrumental in rescuing many brave and valuable [illegible] from untimely graves. Even as early as 1746 a London physician, the author of a Dissertation on Drowning, recommended that his medical brethren should [illegible] of tobacco smoke into the intestinum rectum [illegible] of the surgeons of the Navy and Army, who [illegible] practising the Methods recommended.

Towards the end of the century, however, more and more evidence was being brought forward as to the injurious effects of tobacco in any form as a medical treatment. In 1799 Edward Brailsford described his [illegible] Dissertation on the Chemical and Medical Properties of Nicotiana Tabacum, experiments in which he injected a decoction of tobacco into the rectum of animals, which died soon afterwards. In 1791 Edward Coleman had published a "Dissertation on Natural and Suspended Respiration." Speaking of the recommendation of the Royal Humane Society for the use of tobacco in treating the apparently drowned, Coleman says: "The history of medical errors affords no instance of a more blind and obstinate prejudice than that which still induces the Humane Society to recommend a mode of practice so notoriously destructive. It is actually exhibiting a poison that acts as most other acceptable poisons do, by producing such an extreme degree of debility as the powers of life can support; and there can be scarce any weakness in affirming, that such quantities of tobacco have been administered in this disease as the least [illegible] would have destroyed any man in full health. It is still a [illegible] stigma on the profession, that wholesome cannot but be in the highest [illegible] tendency even of a small quantity of it in one disease, when we wish to relieve the strength; we nevertheless employ it by wholesale in another, where there is a spark of life remains unextinguished. With boastful confidence we have persevered in its use, without ever asking ourselves the necessary question: What are we rationally to expect from such a remedy? This method is quackery in the highest degree." In his conclusions Coleman again asserts that tobacco in any form is highly pernicious, and that this medicine applied in the same baneful effects in cases where respiration is suspended as in a state of health; it is more than probable that no one could ever have been recovered where this remedy had been applied.

It seems strange that so strong a condemnation should have been ignored. But as Brailsford's work was published in Philadelphia and not in London, it was widely known in this country, and as Coleman was a practising surgeon in the

ALCOHOLIC HALLUCINOSIS

BY

Surgeon Commander G. G. WALLIS, R.N.

Alcoholic hallucinosis is relatively rare. Manfred Bleuler [illegible] Mayer-Gross *et al* (1954) gives an incidence of 12 in 567 patients admitted [illegible] alcoholic illness to the University Psychiatric Clinic at Burghölzli between 1933 and 1950. His comparative figure for delirium tremens is 72. [illegible] drunkenness (acute + psych.) 39; for alcoholic Korsakov's psychosis [illegible] chronic alcoholism 341. However in Naval practice I have only [illegible] with this disorder 4 of them within the last year whereas my [illegible] of delirium tremens has actually been smaller. Furthermore [illegible] differential diagnosis from schizophrenia is important for treatment [illegible] prognosis.

After a spell of drinking which is longer than that preceding [illegible] period but shorter than before delirium tremens the patient may [illegible] noises such as crackling singing knocking music or humming. Gradually these ill-defined sounds become more articulate and it is almost pathognomonic that the patient hears hallucinatory discussions or arguments concerning himself. The voices usually condemn him but sometimes they talk to each other quite [illegible] entirely. They are always very clear and frequently they [illegible] by their Christian names. The patient's account of his illness is [illegible] and circumscribed.

Other than possible signs of over indulgence in alcohol there are [illegible] abnormalities but the patient shows some restlessness [illegible] thought speech and action. Hallucinating impairment [illegible] mood of perplexity. Both clouding of consciousness and [illegible] than in delirium tremens but if the hallucinatory material [illegible] ment is implemented by fear and anxiety. Sometimes the [illegible] to the formation of delusions. The confusion is thus in [illegible] in which hallucinations of a nearly-specific type predominate. [illegible] those of delirium tremens in being arbitrary and from schizophrenic [illegible] tions in that they are in the third person. They tend [illegible] are usually in the second person or in the imperative.

Recovery within a few days of onset is the rule but relapses are rather frequent. A relation to schizophrenia is postulated. [illegible]

[illegible] symptoms [illegible] like [illegible] Most [illegible]

[illegible] When [illegible] His [illegible] and plethoric.

The patient gave a long history [illegible] both [illegible] and spent most of [illegible] 1942 [illegible] H.M. [illegible] Commissioned Officer in 1944 [illegible]

[illegible] and persistent hallucinations [illegible]

All these patients (except No. 4 [illegible])

Discussion

The greatest difficulty in diagnosis [illegible] paranoid state from schizophrenia [illegible] by affective incongruity in thought [illegible] dominance and quality of the hallucinations [illegible] be some lowering of the level of [illegible] impairment of orientation, memory, attention or grasp [illegible] in all but a few atypical schizophrenics.

Delirium due to bromide resembles alcoholic [illegible] very rare. Its symptoms include visual as well as [illegible] which differ from those of alcoholic psychoses in their [illegible] distance. Much commoner today is acute [illegible] causes a delirium with hallucinations of sight [illegible] hearing and with signs of sympathetic overactivity [illegible] feature particularly in the disordered perception [illegible]

Finally in the differential diagnosis one should [illegible] epilepsy in which feelings of experiential [illegible] and depersonalization will point the right way [illegible] which provide the sharpest distinction. In epilepsy [illegible] visual, massive and complex, and auditory hallucinations [illegible] resemble those of schizophrenia. However [illegible] needed.

Treatment consists of withdrawal of alcohol [illegible] dietary and fluid losses and where there is restlessness, agitation [illegible] distress the use of

[illegible] drugs [illegible] should be [illegible]

[illegible]

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[illegible]

[illegible]

THE ACUTE RADIATION SYNDROME

BY

Acting Surgeon Commander J. MacF. CLIFF

[illegible] of the recent interest in the acute radiation syndrome, and [illegible] the [illegible] increased incidence of leukaemia in patients with ankylosing spondylitis [illegible] X-rays, the following case is reported.

CASE REPORT

[illegible] first admitted to hospital [illegible] These symptoms settled rapidly but [illegible] back pain of several weeks' duration [illegible] An X-ray examination [illegible] ankylosing spondylitis [illegible] E.S.R. [illegible]

[illegible] received a course of deep X-ray therapy [illegible] the [illegible] spine [illegible] applicator [illegible] 20 × 6 cm. applicator [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

16 2 56	104 (15 38g)	8 400	62	1	1	1				
25 5 56	90 (13 32g)	7 000								
8 7 56	81 (11 99g)	5 000	[illegible]	[illegible]	[illegible]	1		[illegible]	[illegible]	
								[illegible]	[illegible]	
12 7 56	75 (11 10g)	—	—							
14 7 56	63 (9 32g)	11 200								
16 7 56	75 (11 10g)	—								
18 7 56	84 (12 44g)	—						13		
19 7 56	78 (11 54g)	5 200	47	4	[illegible]			[illegible]		
21 7 56	76 (11 24g)	4 200	53	4	[illegible]		1			
23 7 56	88 (13 02g)	4 800		1	[illegible]					
25 7 56	84 (12 44g)	4 600	13		[illegible]					
30 7 56	84 (12 44g)	4 600						[illegible]	[illegible]	
8 8 56	90 (13 32g)	5 800	66	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	
30 8 56	100 (14 8g)	5 800	55	2	[illegible]	[illegible]		[illegible]	[illegible]	
31 10 56	87 (12 87g)	5 500	52	3	[illegible]	1			[illegible]	

Discussion

The acute radiation syndrome was studied [illegible] bomb explosions in Japan and later in [illegible]. The [illegible] clear-cut syndrome was apparent with [illegible] after a few days to be followed by purpura, [illegible] fever, widespread superficial ulceration of the [illegible] intestinal tract and especially of the [illegible]

[illegible] infection and the [illegible] the [illegible] by permitting further haemorrhage

Deep X-ray therapy has now been used in the treatment of ankylosing spondylitis for some years and radiation sickness is [illegible] the dosage is moderate. Sharp and Lawson (1954) reporting their experience of treating treatment in only 4 per cent of a total of 225 cases. Court Brown and Mahler (1954) found that the length of the [illegible] the time between the initiation of treatment and the onset of [illegible] guide to the severity of the subsequent reaction and the [illegible] proportional to both the integral dose and the body size. However there [illegible] there was probably a specific difference in the radiosensitivity of the [illegible] of the trunk and the abdomen.

When the acute radiation syndrome develops although the [illegible] amount of radiation has been given as in the cases of [illegible] subject haemorrhagic state is similar to that seen after [illegible] radiation and the long latent period (about ten weeks in [illegible] in be attributed to the period over which treatment was spread (three weeks). Court Brown (1956) states that in the M R C survey of patients [illegible] ankylosing spondylitis treated with X rays there were four similar cases [illegible] all but one had received conservative ammounts of treatment 2 of these [illegible] recovered and 2 died one of the latter receiving a large dose of radiation [illegible] in the other the cause of death was complicated by the fact that he might have been taking aminopyrine before he was given deep X ray therapy

There is no doubt that X ray therapy has been of great value in the symptomatic treatment of ankylosing spondylitis but there is increasing evidence that there may be a permanent deleterious effect on the bone marrow and leukaemia may be a late result of radiation. In an M R C report (1956) records of 13 352 patients with ankylosing spondylitis treated with X rays during the period 1953 54 were studied and 38 were found to have developed leukaemia up to 1955 the latent period being about six years this incidence was ten times the normal expectation but the control group of 400 untreated cases was too small to exclude completely the possibility that patients with ankylosing spondylitis are predisposed to develop leukaemia. Abbatt and Lea (1956) reported on 1 627 treated patients from the records of the Ministry of Pensions and National Insurance and found a gross excess of deaths from leukaemia but again the control series was too small to establish whether the leukaemia was associated with ankylosing spondylitis or irradiation or with ankylosing spondylitis treated with irradiation.

The toxic effects of radiation on the bone marrow of patients with ankylosing spondylitis have been studied by Stewart and Dische (1956). In 78 untreated cases the bone marrow was hypercellular in 39 per cent and normal in the remainder but in all cases irradiated to a dose of 1 020–1 640 r there was aplasia shortly after treatment and aplasia or hypoplasia was still present in seven of the ten marrows examined fifteen months to fourteen years after treatment. marrow from untreated areas showed transient changes only

The [illegible] and [illegible] Nations [illegible] certainly [illegible] symp[illegible] when [illegible] using [illegible]

[illegible]

I am grateful to Dr J Mc[illegible] of [illegible]

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A CASE OF SPONTANEOUS HÆMATOMA OF THE SPERMATIC CORD

BY

Surgeon Lieutenant P BLISS R N V R

The following case was treated in H M S *Eagle* whilst at sea during flying operations and illustrates some interesting features

The patient aged 19 was admitted to the Sick Bay during the afternoon of 2nd August 1956 with pain and swelling in the left inguinal fossa Ten minutes previously he had jumped down off a gun mounting a distance of some four feet and in doing so he landed awkwardly and felt a sudden tearing pain in his left side He felt his inguinal region and discovered a large tender swelling

The pain was constant and aching in character and radiated up into the abdomen and down into the scrotum It was made worse by walking or coughing There was no previous history of pain or swelling in the groin

On examination—Pulse 84 Respirations 22 Chest and heart normal Abdomen no tenderness rigidity or guarding generally In the left inguinal fossa a swelling 4 in long and 1½ in across was visible along the line of the inguinal canal from the inguinal ring to the neck of the scrotum Tender to palpate and semi-solid in consistency it was compressible but irreducible and was without a cough impulse although a transmitted impulse was definite It was not separate from the spermatic cord The left testis and epididymis were normal but a small varicocele [illegible] was present Right scrotum and testis normal

The patient was examined by three doctors independently and all three reached a

[illegible]

REPORT ON NORTH QUEENSLAND MEDICAL CONFERENCE, CAIRNS, 1956

[illegible] may be surprised to receive a report of a North Queensland Medical Conference appearing in our Journal but there are several items discussed which are of interest to naval medical officers, especially the meeting in Darwin. It is also hoped that publication of this report will stimulate medical and dental officers of the Commonwealth navies to send articles of interest for publication in this Journal. Original papers on professional subjects, travel, personal experiences etc. from members of the Commonwealth navies would be very welcome.—Ed.]

The Conference opened with an Inaugural Address by Dr. Otto Hirschfeld, Chancellor of the University of Queensland, who discussed the development of medical degrees. He was followed by the Federal Minister for Health, Dr. Cameron, with a short speech on the responsibilities of Medical progress.

The academic programme comprised a number of papers on a very wide variety of subjects, these were mostly given by local practitioners but a few were by visitors from Brisbane and the southern states. Because of the large quantity of material presented, only papers considered to be of possible interest to Naval Medical Officers are reported here.

Acute Pancreatitis

[illegible] lecturer, Dr. Hirschfeld expounded his views on some of the [illegible]

Insulin [illegible] as had at first been [illegible] patients in Lancashire [illegible] insulin [illegible] that the treatment [illegible]

Discussing Hypertension [illegible] the ethereal BP [illegible] polamine and mecamylamine [illegible] Hexamethonium [illegible] tensive drugs but [illegible] effects might be [illegible] (Pentolinium) by mouth [illegible] the best treatment [illegible] Ansolysin. Spinal [illegible] do not really [illegible] psychosis. Unfortunately [illegible] Hirschfeld emphasized [illegible] and Phenidrol [illegible] made a particular plea [illegible] dyspepsia and which Bevan [illegible] in the past if [illegible] a patient. Apresoline [illegible] in effect [illegible] leucocytosis is not [illegible] justify it.

Dr. Hirschfeld [illegible] all and gave his [illegible] being treated immediately. [illegible] changes or if the thrombin [illegible] urea remains below 70 mg. per cent. [illegible] known in hæmophilia [illegible] who eventually died of [illegible] is all that is necessary.

Anticoagulant [illegible] patient. Once started they [illegible] the morning from subcutaneous [illegible] course of anticoagulant [illegible] to control than the thrombin [illegible] prescribed Kumin best.

In the general [illegible] used early fears of thrombosis [illegible] If it is given by mouth Dicoumarol [illegible] sized that adequate dosage [illegible] were not giving big enough [illegible]

Of Diuretics in Congestive Failure [illegible]

A[illegible]monium Chl[illegible] Mer[illegible]yl begins to lose its effect. Methonium he had [illegible] the [illegible] oral diuretics. Diamox had not been very su[illegible] were most disappointing.

D[illegible] Dr. H[illegible] repeated that Serpasil is liable to cause depression [illegible] on the other hand might produce [illegible] Toxic effects with these drugs seem to be related [illegible] treatment than to the level of dosage. If [illegible] must be stopped altogether and [illegible] another toxic effect that may be encountered.

Cortisone and [illegible] [illegible] miraculous effect in a few cases of Asthma but are disappointing in the [illegible]. If they are successful a maintenance dose of 1 2 tablets daily [illegible] indefinitely. Disseminated Lupus Erythematosus is controlled by Cort[illegible] Asthma must be given as well. The symptoms of Pemphigus are [illegible] continuous maintenance is required. This also applied to [illegible] Erythema Multiforme, allergic states and Eczemas are all benefited. In all skin cases the Cortisone is given systemically. topical application of Cortisone preparations has been given up in the skin department of the B[illegible] General Hospital except as a diagnostic test for Allergy.

In Rheumatic [illegible] and Rheumatoid Arthritis Dr. Hirschfeld considers Aspirin to be better than Cortisone. It must be given however in the optimum dose which varies from patient to patient.

Prednisolone is an [illegible] over ordinary Cortisone in that it has no effect on Sodium or Potassium metabolism. It affects gastric secretion however and may cause peptic ulcers. Prednisone is another useful analogue four or five times stronger than Cortisone. These analogues can replace Cortisone in any condition except Addison's Disease which does not respond to them and requires 12.5 mg. of Cortisone daily for its control.

During the ensuing discussion several speakers agreed that the level systolic blood pressure is of no significance in assessing Hypertension and that systolic readings up to 180 mm. Hg. are often obtained in healthy young adults.

Dr. Hugo Flecker of Cairns repeated a lecture he had given in Townsville last year on injuries caused by Marine Animals.

Dr. Flecker deplored the fact that there is very little real knowledge of the Zoology of this subject. A registry of cases of this sort had been kept in Cairns since 1934 but had not been very productive. There was a natural tendency when treating a victim to overlook the necessity of collecting the animal thought to have been responsible so that it could be identified and studied.

The danger from *Sharks* was probably overestimated. He considered that fatalities were usually due to a "rogue" shark who had acquired the taste for human flesh. Nevertheless shark nets were justified for protecting bathers although the overall risk of swimming in shark infested waters was probably less than that of being involved in a road accident in the city.

Crocodiles in North Queensland [illegible] are [illegible] the fresh water kind but [illegible] in the vicinity of mangrove swamps.

The popular idea of [illegible] injuries are due but purely to [illegible] Stonefish. The Australian species is different to the Indian and South African species which might be more deadly. The Australian Stonefish has never, to his knowledge caused a fatality. In the worst case he had known of the victim was incapacitated for four months but eventually recovered without any permanent disability. There had been no serious cases in Cairns since 1927 and in fact only two proven cases in twenty-nine years. Both were treated and the patients were not admitted to hospital. Dr Flecker described the case of a Zoologist in South Africa who was accidentally stung on the hand by one of the local species. He suffered agonizing pain which was not affected by morphia, and it is only relieved by hot bathing. From this Dr Flecker concludes that application of local heat to the wound is the best treatment.

Stories of people being caught by the foot in a *Giant Clam* (Tridacna) are pure fiction there has never been a recorded case. The valves of the clam close very slowly when disturbed and in any case they do not meet tightly enough to trap anyone because of the thickness of the mantle.

The *Giant Grouper* is reputed to be more dangerous to divers than sharks but he had been unable to find any record of anyone being injured by one.

Notesthes Robusta a Scorpaenid fish which buries itself in the sand and is sometimes trodden on is often confused with the Stonefish. It is not poisonous and its spines produce only minor injuries which may however, then septic.

Of the *Jellyfish* the Bluebottle or Portuguese Man o' War (Physalia) is like the Stonefish frequently blamed for injuries produced by other organisms. The tentacles of Physalia which are 5 to 10 ft long produce whip like wheals but no general symptoms and it is seldom fatal.

There had recently been some fatalities at Cardwell North Queensland in which the animal responsible had been identified as a new species of Medusa it is being studied by marine zoologists and has not yet been named.

The so called Sea Wasp is found only north of Innisfail on the Queensland coast and as far west as Darwin. He objects to the term Sea Wasp and in and around Cairns it is called Irukandji an Aboriginal name. The responsible organism is unknown, but he has reason to believe it to be very small or microscopical it is certainly not a Jellyfish. It does not produce any wheal but only a small puncture like a wasp sting this is followed by severe collapse with muscle cramps retching and vomiting. Some victims had the general symptoms only without any evidence of a local lesion. On the other hand some people seemed to be insusceptible to it and had no general symptoms after being stung.

During the discussion on this paper a speaker from Thursday Island mentioned his experience there. The sharks in Thursday Island are not considered very dangerous but are very inquisitive. The local divers said that if a shark circles you once he is just curious but if he circles three times it is time to get going.

supervision of

the nursing staff is needed Hexachlophene soap for scrubbing up had been found useful

Skin preparation is most important and he had found 2½ per cent Iodine tincture to be by far the best solution for the purpose. A check for Iodine sensitivity is of course essential The drape used over the lower half of the patient must be waterproof to prevent sweat soaking through it and contaminating instruments A piece of plastic sheeting wrapped in a green operation sheet is satisfactory

Wound infections seem to come in epidemics and demand investigation for a common factor such as a carrier among the staff The use of impervious masks must be enforced Care is needed in changing gloves when hands and forearms are sweating There seems to be an undue incidence of post-operative tetanus in hot wet conditions This is probably due to street dirt brought in to the theatre on shoes and the wearing of overboots in the theatre is a vital necessity

Atelectasis is the most common respiratory complication and prophylactic antibiotics do little to reduce the incidence Post-operative breathing exercises, supervised by a physiotherapist are the best measure for its control

Post-operative Ileus can best be avoided by not doing cold gastro-intestinal operations in the hot weather months Unavoidable operations should be preceded by electrolyte studies and followed by the keeping of careful fluid balance charts A flame photometer is practically essential for speedy estimation of electrolytes

Opening the discussion Dr Dorney of Townsville agreed with the use of 2½ per cent Iodine for skin preparation He considered that wounds should not be dressed with dry gauze but should always be sealed in some way He uses a thin strip of gauze soaked in Tinct Benz Co Post operative Ileus is usually due to potassium lack therefore potassium salts should be given before operation and again after the first forty-eight hours post-operatively It is difficult to give too much potassium and he had given up to 18 grammes a day The average dehydrated post operative patient needs about 12 grammes per day

Presenting a paper on *Tropical Cutaneous Ulcers* Dr Petherbridge of Townsville said that when local ulceration was seen in the tropics a wide field of differential diagnosis had to be considered

Possible causes include Granuloma Inguinale Lymphogranuloma Venereum Leprosy Yaws Cutaneous Leishmaniasis Cutaneous Amoebiasis Hookworm Ulcers Barcoo Rot Coral Ulcers and true Ulcus Tropicum It should also be remembered that ordinary gravitational or varicose ulcers are as common in the tropics as elsewhere and that Syphilitic ulcers were still a possibility Proper bacteriological investigation of every ulcer is essential and a W R should never be omitted

Granuloma Inguinale is often seen in Aborigines and is not necessarily either tropical or venereal It responds well to the wide spectrum antibiotics Lymphogranuloma Venereum is rare in Australia

Leprosy Yaws and Hookworm might all be seen occasionally and the treatment is that of the general disease

Cutaneous Amœbiasis is seen in people who have been in New Guinea It is secondary to Amœbiasis elsewhere, and sometimes follows operation on an amœbic abscess The skin lesion is soon sterilized by Emetine and the bowel infection must then receive treatment Cutaneous Leishmaniasis is only seen in people who have been in North West India

Barcoo Rot is the same as the desert sores seen in the last war It is found only in bushworkers and malnutrition is a big factor It is a chronic infective bubo and sore and only the common organisms are found on bacteriological investigation The lesions disappear after treatment with mild antiseptics and a good mixed diet with vitamin supplements

True Tropical Ulcer does not occur in Australia even in the tropical jungles of North Queensland but may be seen in personnel returning from New Guinea It is a chronic phagedæne sloughing ulcer with normal surrounding skin The aetiology is filth flies food fruction etc and the treatment is by general measures for removal of these factors.

In the discussion of this paper several speakers stressed the importance of physical and psychological stress in the aetiology of all tropical ulcerative lesions particularly in Servicemen

Dr W R Horsfall of the Commonwealth Health Laboratory in Cairns gave a short paper on the Blood Sedimentation Rate in different races in North Queensland His results for European clerical workers agree very well with the figures usually given as normal i.e. up to 5 mm /hr for men and 10 mm /hr for women In heavy manual workers of European descent however he found those over 35 to have much higher rates although otherwise apparently normal He suspects this to be connected with excessive beer drinking

In inland Aborigines and Torres Strait Islanders however those known to be in good health consistently give rates that would be considered pathologically high in Europeans In these races Dr Horsfall also found that serum protein and gamma globulin levels are higher than the accepted 'normal' The discrepancy is big enough to give false positive results in liver function tests such as Colloidal Gold and Thymol Turbidity

Medical Officers who have to treat Aborigines and other non European races should bear these differences in mind in assessing the results of Blood Sedimentation and Liver Function tests

Dr Horsfall presented for his second paper a dissertation on Rat Control in ships and on shore

Sodium Fluoroacetate or *1080* had been found to be the most effective poison for deratting ships and is much superior to Cyanide fumigation Bars of apple and saveloy are soaked in a strong solution of the poison and distributed about the ship on sheets of white paper An accurate record of the number and position of all baits is essential to ensure that all those not eaten are recovered 1080 is so poisonous that one nibble is fatal and rats have no chance to develop

bait shyness. This poison has produced large numbers of dead rats even shortly after an apparently successful fumigation with Cyanide. An important advantage is that the crew do not have to evacuate the ship when 1080 is used although strict supervision is necessary because of its extreme toxicity.

Hydroxy-coumarin (*Warfarin*) is the best rat poison for use in short premises where 1080 would be too dangerous. It is a liver poison which depresses prothrombin production and kills the rats by causing haemorrhage. Its main advantage is its comparative harmlessness to other animals. Warfarin must be ingested continuously for several days before it becomes fatal and accidental taking of a single dose by humans or domestic animals is not dangerous. The only recorded case of human poisoning by Warfarin was in Koreans who ate poisoned buns for a fortnight and even then only 2 out of 14 died. Warfarin baits are laid continuously for fourteen days so as to inhibit the rat's prothrombin production until all circulating prothrombin disappears from the circulation.

Dr Horsfall considered that rats are no longer important because of the diseases they spread (on account of advances in medical knowledge) but because of the damage they do. Their destruction however is still a great economic necessity and it has been greatly facilitated by the development of 1080 and Warfarin.

The final academic meeting of the Conference took the form of a Symposium on alcoholism, presented by Drs Richards and Douglas of Townsville and Dr Robinson of Charters Towers. This meeting was exceptionally well attended and many speakers took part in the discussion which was left unfinished because of lack of time.

The problem of Alcoholism was stated to be one of the most important today. It ranks with Cardiovascular disease as a cause of morbidity and mortality. The consumption of beer throughout Australia was given as 24 gallons a year per head of population and has doubled since 1938. In North Queensland it is as much as 41 gallons per head of population. The majority of beer brewed in this country has an alcoholic content of 3½ to 4 per cent. Alcoholism was defined as the state of being unable to have one drink and then stop. It is axiomatic that an alcoholic can never again become a controlled drinker.

Alcohol is the common drug of addiction in European society just as Opium is in China, Hashish in the Middle East, Mescal in Central America etc. The prevalence of Alcoholism in Australia was attributed to its social acceptability. Addicts to other drugs are outcasts from our society whereas the ability to drink fast and deep is a social advantage and there is a tendency to regard a non drinker or even a moderate drinker as a misfit.

Alcoholism may be associated with every defect of intelligence, neurosis or psychosis and 30–40 per cent of admissions to Mental Hospitals are due to or aggravated by alcoholism. Nevertheless most alcoholics are psychiatrically normal, but emotionally immature. It is these people who are unduly influenced by the social attitude to alcohol and by unwise drink laws e.g. in Victoria.

The clinical features of alcoholism were described by Dr Douglas. The

clinical [illegible] by an alcoholic is characterized by prevarication and concealment [illegible] doubt in his troubles may not at first be apparent Late [illegible] Wernicke's Korsakow's psychosis or peripheral [illegible] the condition might be diagnosed at an earlier stage He had found the earliest sign to be undue tenderness of the calf muscles with hyperæsthesia of the soles of the feet Alcoholics might present as cases of heart-disease due to Vitamin B deficiency (cardiac Beri-Beri) Signs of liver cirrhosis may also present

Dr Douglas said that alcoholics are particularly susceptible to Tuberculosis because of the accompanying malnutrition

Dr Robinson then gave a description of the organization and work of Alcoholics Anonymous who he said offer the only real hope of rehabilitation for the established Alcoholic

Considering the treatment of Acute alcoholic attacks Dr Douglas said that adequate sedation is essential but Paraldehyde should not be used because of its chemical relationship to alcohol Sodium Amytal 7½ grains can be given by injection or 6 grains by mouth followed by 3 grains four hourly He also used a mixture containing 30 grains each of Chloral Hydrate and Sodium Bromide with 30 ℥ of Tinct. Digitalis Largactil is dangerous in alcoholism because of liver damage but intravenous Serpasil was said to be very good although he had not yet tried it To correct the avitaminosis he gave 100 mg vit B, daily by intravenous injection at first and then intramuscularly for fourteen days This was supported by vit B Complex tablets by mouth

Dr Robinson said that Delerium Tremens could be treated by intravenous Pyridoxine 500 mg daily Intravenous Serpasil is also very good

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JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE
ANNUAL REPORT, 1956

Balance Sheet

Assets		£	s	d	Liabilities	£	s	d
Balance 31 12 56	Bank	620	11	11				
	Cash	1	12	8½				
3% Funding Stock		100	0	0				
3½ % War Loan		600	0	0	1957 Subscriptions in advance	44	7	9
Advertisement Charges not paid—Autumn 1956		75	12	0	Balance Creditor	1 353	8	10½
		£1 397	16	7½		£1 397	16	7½

Audited and found correct

W J D Haines
Lieutenant-Commander (S) R N

Reviews

Physiology of Voluntary Muscle. British Medical Bulletin, Vol. 12, No. 3. London: Medical Department, The British Council. [illegible] Price £2 10s 0d.

Large numbers of [illegible] books in all branches of medicine are [illegible] being written and revised, but these cannot do more than present accepted principles and provide a source of reasonable information. The many and varied scientific journals published regularly and frequently are filled with highly technical pages on mostly controversial subjects and, though of unquestionable value, the wide range often makes it difficult for a busy reader to find all that has been written on his particular subject. The British Medical Bulletin fills a most important gap between these two.

With three attractive numbers published each year the Bulletin achieves a solidarity of purpose. Taking a broad subject as a title, each number presents sixteen or so aspects of that subject written by distinguished authors. The wide field covered is well illustrated by the titles of the past six numbers which are "Neurobiology", "Recent Research in Vitamins", "Surgery of the Heart", "Hormones and Reproduction", "Blood Coagulation and Thrombosis" and "Tuberculosis".

The current number, which is the subject of this review, entitled "Physiology of Voluntary Muscle", is introduced by Sir Rudolph Peters who briefly outlines advances in the knowledge of the working of voluntary muscle, giving credit to such pioneers as Sherrington and A. V. Hill as well as modern investigators such as Partin and Katz.

The writers of the sixteen articles are well known in their particular field, and the major aspects of the subject are fully presented: design, dynamics and biochemistry. The sequence is carefully chosen, the earlier papers of Hill and the Huxleys being devoted to structure and thermodynamics, and the final papers by Martin, McArdle, Bate-Smith and Bendall to fatigue, disease and death in muscles. It is also pleasantly appropriate to find amongst these a stimulating article on "Muscular Effort" by Roger Bannister.

A welcome feature is the "Notes on Contributors" which introduces the writers and gives the readers a personal contact—making the publication more alive. In the review of books two only are chosen and these have direct application to the subject of Voluntary Muscle.

The British Medical Bulletin is clearly and attractively produced. The print is easy to read, the plates, particularly the electron micrographs, are exceptional, and the illustrations of locomotion in dogs, horses and man add greatly to the value of a comprehensive article by Gray.

Though the price of the Bulletin is likely to place it out of reach of the student and young research worker, it is nevertheless good value for money and would seem particularly useful to the specialist, consultant or senior investigator. The articles, however, are not so exclusively technical as to be of value solely to the super-specialist, but have a wide interest which should appeal to any thinking medical man.

Anaesthetic Accidents. By V. Keating, M.B., B.Ch., D.A., F.F.A.R.C.S., Consultant Anaesthetist and lecturer in Anaesthetics, University College Hospital of the West Indies, late Senior Specialist in Anaesthetics, Royal Army Medical Corps. First Edition 1956. Pp. 261. London: Lloyd-Luke (Medical Books) Ltd. Price 25s 0d net.

During the last fifteen years anaesthesia has made tremendous advances, but each advance, though aimed to benefit the patient, has made the subject more specialized

and still more dangerous [illegible] of the average medical officer. In fact there can be no branch of Medicine [illegible] from amongst the doctors who might otherwise be prepared to train [illegible] of the specialties when the situation arises.

To the General Practitioner [illegible] who can give anaesthetics for minor surgical procedures with ease [illegible] this book will bring little if any comfort, although its intention [illegible] would have been to help them. Indeed it is more likely to scare them [illegible] the simplest anaesthetics which previously they were prepared to attempt.

On the other hand to those [illegible] upon anaesthesia as a specialist subject or indeed anyone already engaged in the [illegible] the book would be invaluable. A prodigious amount of research must have been undertaken in order to produce such detailed evidence of the unexpected in and this [illegible] and extensive references. Every conceivable complication appears to be included [illegible] the extent of making one doubt the safety of what are usually accepted as [illegible]. This is probably an excellent thing in itself and the inclusion of such [illegible] rupture of the stomach due to [illegible] the mask explained [illegible] and gives patients one from becoming [illegible] Most important still is the fact that the book is not a collection of mishaps [illegible] physiology, pharmacology and pathology of [illegible] will describe what [illegible].

The book is probably [illegible] preparing for a higher qualification in anaesthesia. It would also be [illegible] Used in this way it should help considerably [illegible] the irregularly high anaesthetic mortality figures quoted—for example in the United States the death loss of life from anaesthesia (including those cases where the anaesthetist was [illegible] two and a half times the annual mortality of poliomyelitis in that country.

Price's Textbook of the Practice of Medicine. Edited by D. Hunter, M.D., F.R.C.P., Physician, The London Hospital. Pp. xii + 1774. 9th Edition. London: Oxford University Press. Price 63s. net.

The writer of this review has a particular affection for Price's Textbook of Medicine because he started his clinical work at the time when the first edition appeared in 1922. Great were the discussions in those days amongst medical students on what book on medicine they should get, but the idea of a book written by many authors instead of one, which was a novelty at that time, was immensely appealing and in most cases won the day for Price. And as the writer grew up with this textbook and has in the main [illegible] to its various editions ever since.

Basing one's knowledge on one comprehensive book instead of reading many is really essential if one attempts to know all the important things (which is a most difficult thing to accomplish). Such a policy is a sine qua non for passing examinations, whether qualifying or the higher type. And if one is going to base one's knowledge on any one book it is safe to say that it will be a very very long time before a better one is produced than Price's Textbook of Medicine.

The reviewer would hesitate to single out any special feature of the new edition. Any one who has used this book throughout the years is more likely to notice new features [illegible] in fairness it should be just as important to dwell on the old ones that are retained. Of the new material, that perhaps on the cardiovascular system and the respiratory system [illegible] the modern treatment of coronary thrombosis and pulmonary tuberculosis [illegible] found most helpful.

It is really not feasible to criticize a book of this size, but when numerous [illegible] there is always likely to be a certain amount of reduplication. A good example [illegible] is the description of tuberculin tests on page 88, which is given all over again on page 1022. But that is only a detail and leaves the reviewer no real criticism to offer.

We Acknowledge with thanks Receipt of the Following Publications:

Acta Medica et Biologica, Anales De La Facultad de Medicina Montevideo, Annal of Tropical Medicine and Parasitology, Annales Medicenae Interna Fennicae, British Medical Journal, Bulletin International de Services de Sante, Danish Medical Bulletin, Guy's Hospital Gazette, In Which We Serve, Journal of the Irish Medical Association, Journal of the Royal Army Medical Corps, Journal of the Royal Naval Scientific Service, Kyushu Journal of Medical Science, Medical Journal of Osaka University, Middlesex Hospital Journal, Mie Medical Journal, Military Medicine, Physiologia Bohemoslovenica, Proceedings of the Staff Meetings of the Mayo Clinic, Revue De Medecine Navale, Rivista Di Medicina Aeronautica, Royal Melbourne Hospital Clinical Reports, St Mary's Hospital Gazette, St Thomas's Hospital Gazette, The Australian Journal of Experimental Biology and Medical Science, The British Journal of Surgery, The Bulletin of the Tokyo Medical and Dental University, The Medical Press, The Tohoku Journal of Experimental Medicine, Tropical Diseases Bulletin, University of Durham Medical Gazette, Bukuyama Medical Reports, Yokohama Medical Bulletin, Yonago Acta Medica

BOOKS RECEIVED

THE OFFICIAL HISTORY OF THE CANADIAN MEDICAL SERVICES 1939-45. Edited by W. R. Feasby, B.A., M.D., Lieut.-Col., R.C.A.M.C., Supplementary Reserve, Lecturer in Physiology, University of Toronto. Pp. xvi+368. Illustrated with Paintings and Photographs by Canadian War Artists and Photographers. Price 5 dollars. 1956. Ottawa: Edmund Cloutier.

News of the Service

OBITUARY

Surgeon [redacted] R N W W RIDDOLPH R.N (Rtd)—[redacted] November 1956 B[redacted] March 1883 he qualified in 1908 and entered the R N Medical Service [redacted] May 1910 He was promoted to Surgeon Lieutenant-Commander [redacted] in 1922 and was placed on the Retired List (Vex) in May [redacted] with the rank of Surgeon Captain

During World War I Surgeon Captain Riddolph served in H M Ships *Berwick Manica* and *Phidyle* [redacted] R N Barracks Portsmouth

He was [redacted] Surgeon Commander in June 1930 and served in H M Training Establishment St Vincent in R N Barracks Chatham with the Y Board as Crew and [redacted] Assembly Medical Board until December 1946 when he was released [redacted]

From April 1951 [redacted] Oct 1954 Surgeon Captain Riddolph was employed as the Port Health Medical Officer R N and R M Recruiting Centre Newcastle on Tyne

Surgeon Captain H H GILL R N (Rtd) died on the 6th October 1956 Born on 1st [redacted] L.R.C.P. he qualified in 1894 and entered the R N Medical Service as a Surgeon on the 12th November 1895 He was promoted to Staff Surgeon in 1903 Surgeon Commander in 1911 and was placed on the Retired List at his own request in November 1921 with the rank of Surgeon Captain

During World War I Surgeon Captain Gill served in H M Ships *Centurion* *Prince George* *Lord* and *Barrhaute* and in R N Barracks Chatham and Portsmouth

HONOURS AND AWARDS

Commander of the Order of the British Empire

Surgeon Captain D H Kernohan M B B Ch (Rtd)
Surgeon Rear Admiral L Lockwood *M I O D S C* M D Royal Australian Navy

Member of the Order of the British Empire

Warrantmaster Lieutenant Commander J J Carter

Royal Red Cross

Miss K S E Richard Principal Matron Q A R N N S

Associate of the Royal Red Cross

Miss B B Williamson Superintending Sister Q A R N N S

HIGHER DEGREES

Diploma in Public Health—Surgeon Commander W H E McKee
Diploma in Clinical Pathology—Surgeon Lieutenant Commander R S Finnester
Fellowship in Dental Surgery—Surgeon Lieutenant (D)—R L Travis

PROMOTIONS

To Acting Interim Surgeon Commander—W E Crocker (16 9 56)
To Surgeon Lieutenant Commander W A N Mackie *D S C* (3 10 56)
J G H Sluppard *C M* (10 9 56)
To Surgeon Lieutenant-Commander (D)—R H Manning (26 9 56)

The following provisional selections have been announced for promotion to date 30th June, 1957

To Surgeon Captain—C P Collins *DSC* J M H Hood *OBE*

To Surgeon Captain (D)—R W Stevens

To Surgeon Commander—D Stark R W B Scott W B Jack M P Glanville C N Shell

To Surgeon Commander (D)—R Cladd H R B Gratton

Commonwealth Naval Board provisional selections for promotion to date 30th June, 1957

To Surgeon Commander J A B Cursell RAN

RNVR—Half yearly promotions to date 31st December, 1956

To Surgeon Captain—C I Ross *OBE* Scott Douglas

To Surgeon Commander—R A McKeown Ulster Division

To Surgeon Commander (D) B W Pyle London Division

RCN (Reserve)—31st December, 1956

To Surgeon Commander—J R Moore

To Acting Surgeon Commander—H D Hibbs

RNZNVR—31st December 1956

To Surgeon Commander (D)—A De Berry

TRANSFER TO PERMANENT LIST

Surgeon Lieutenant E H Sims

ENTRIES FOR SHORT SERVICE COMMISSION

R A I Agnew MD BCh MRCP E F E Burnett MB BS MRCS LRCP P R Butler MB BS MRCS LRCP W G Clarke LRCP LRCS W I Jones MB BCh BAO J R Ledsome MB ChB C W Miller MB BS MRCP LRCP D L Owen MB ChB G W Scott MB BS MRCS LRCP B C Wyatt MB BS MRCS LRCP G L Wylie MB ChB J W Rees BDS

RETIREMENTS

Surgeon Captain D H Kermode *QHS* Surgeon Commander A L Moorby

Surgeon Lieutenant Commanders C B Wilks J A H Wylie

Surgeon Lieutenant Commander (D) I Murray

Surgeon Lieutenants D O Hughes I Parrick M C Webber

WARDMASTER OFFICERS

PROMOTIONS

To Wardmaster Lieutenant—A E Masters (18.10.56)

To Senior Commissioned Wardmasters—H Hodgkinson MSR (1.10.56) J Morris (1.10.56) A L Walker *BEM* (1.10.56)

To Acting Commissioned Wardmasters—P Mellett SBCPO D/MX 53795 (17.9.56) M H Richards SBCPO D/MX 60977 (18.10.56)

RETIREMENTS

Wardmaster Lieutenant V C Mitchell

Senior Commissioned Wardmaster E G Lewis

Commissioned Wardmaster C A Still

ADMIRALTY FLEET ORDERS—1956

(This page is perforated for filing)

2674.—Canteens—Staff—Medical and Dental Examinations and Treatment—Disposal of Documents

2681.—Medical—X-ray of Close Contacts of Cases of Pulmonary Tuberculosis.

2689.—Medical—Carbon Monoxide Poisoning—Examination of Specimens in Suspected Cases.

2738.—Hospitals—R.N. Hospitals and Sick Quarters—Name.

2786.—Medical—R.N. Air Stations—Health Control of Arrivals in the United Kingdom by Air from Abroad.

2793.—Courses—Ratings—Dental Training for Sick Berth Attendants and Probationary Wren Dental Surgery Attendants.

2797.—Prizes—North Persian Memorial Medal, 1956, for Papers on Tropical Medicine or Tropical Hygiene

2798.—Prizes—The Parkes Memorial Prize, 1956.

2809.—Uniform—Q.A.R.N.N.S. Officers—Wearing of White Headgear

2857.—Medical—R.N. Medical Bulletin—Issue No. 3—Distribution

2876.—Naval Stores—Allowances—Dental Purposes.

2908.—Accidents to Naval Personnel Occurring Outside the United Kingdom—Resulting in the Loss of their Services—REPORTS.

2918.—Medical—Sick on Store—Officers—Risk and Expense Statement—Revised Use of Form M.156

2931.—Uniform—Officers—Gloves.

3051.—Hospitals—Civil Hospitals and Sanatoria—Military Administrative Officers.

3054.—Medical Examination on Discharge.

3063.—Surgeons and Agents.

3084.—Medical Stores in Ships in Reserve.

3149.—Dental Stores—Films, Dental X-ray—Issues.

3188.—Medical—Communicable and Venereal Diseases—Returns

3189.—Medical—First Aid Poster

3190.—Officers—General—The New Officers Structure—Position of Retired Officers.

3208.—Uniform—Q.A.R.N.N.S.—Dresses, White, Tropical—New Patterns—Introduction

3274.—Medical, Dental and Hospital Consultants.

3332.—Income Tax—R.N., R.M., Q.A.R.N.N.S. and V.A.D. Officers—Income Tax Relief for Uniform Maintenance.

3335.—Pay and Allowances—Allowances, Uniform—R.N., R.M., W.R.N.S., Q.A.R.N.N.S., V.A.D. and Reserve Officers—Revised Grants and Upkeep Allowances.

3341.—Medical—Ratings and R.M. Other Ranks—Disposal of Those Suffering from Mental Disabilities.

3342.—Medical—Trichlorethylene—Precautions for Use in Degreasing Plants, etc

Notice

The Editor invites medical officers to send in original papers on professional subjects, travel personal experiences &c. Items of news and matters of interest to the naval medical service will be welcomed from ships and establishments on home and foreign stations. Notices of births, marriages and deaths are inserted free of charge to subscribers

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The Journal is published quarterly four numbers comprising one volume.

Articles and communications may be sent to the Editor at any time They should be **clearly written or, preferably, typed and sent in duplicate** to The Editor R.N. Medical School Alverstoke, Hants.

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For dental officers in the above categories the subscription is 10s per annum (postage included) Single copies 5s

For all others who are *not* in the above categories the subscription is 24s per annum (postage included) or 6s per single copy

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Journal
of the
Royal Naval Medical Service

EDITORIAL

The balance sheet for 1956 was published in the Winter issue Vol. XLII No. 1 p. 44. The Journal has been through difficult times since the end of the war but steps taken by the managerial committees in 1950, 1951 and 1952 to try to remedy the situation are now bearing fruit and it is satisfactory to note that since 1951 there has been some improvement in the financial situation. There has also been an increase in distribution throughout the world as requests for copies from America, China, Russia, Israel and elsewhere have shown.

The continued support of all medical and dental officers is very necessary to enable the Journal to continue publication and it is earnestly requested that the support may not only be financial but also with articles and case reports for which there is an equal need. During the past few years dental officers have given very good support and it is hoped that this will continue.

BACK NUMBERS

The editors will be pleased to receive old copies of the Journal not required by the owners; postage will be refunded. There is a particular shortage of all numbers from 1915 to 1946 inclusive and from 1952 to the present issue. Subscribers can help by returning unwanted copies to the editors.

A bound volume for 1943 borrowed from the Medical School library has been missing for some years—it will be greatly appreciated if the borrower returns it at an early date.

Articles

THE DEVELOPMENT OF NAVAL PREVENTIVE MEDICINE[1]

BY

Surgeon Captain G H G SOUTHWELL-SANDER R N

In order to trace the development of naval preventive medicine from the earliest times to the present day it is necessary briefly to take a brief glimpse at the conditions of life at sea and enquire into some of the factors and influences which affected the health and well-being of the sailor through the centuries.

There have been four fundamental factors which have governed the development of ship construction which in turn have had profound effects on the conditions of life afloat and the sailor's health. These are Slavery Gunpowder the Mariner's Compass and Steam.

Slavery

It was slave manpower which marked the fighting galleys of ancient times such as those of Greece and Rome. These were propelled by oars supplemented by sail. The rowers—one man three or even five to an oar—were housed sometimes below deck and often chained and otherwise barbarously treated. Conditions must have been bad but mercifully the actual time at sea was short. The other type of ship in these early times was the round ship a heavy cumbersome sailing ship without oars and used for trading. These too were manned by slave labour and conditions were likely to be severe. Thus was sown the seed of ill health among sailors.

Gunpowder

The discovery of gunpowder and the development of ordnance produced a big change in ship's design. Decks were required to carry guns. The high castles of the fifteenth and sixteenth centuries gave place to the two or three decks of the seventeenth and eighteenth centuries. This had a profound effect on health as the only means of ventilation was except on the upper deck by hatches scuttles or gunports. The increase in complement to man the guns as well as sail the ship caused overcrowding.

[1] Presidential address delivered to the Services Group of the Society of Medical Officers of Health on 7th January 1957 reprinted by kind permission of the editor of *Public Health*

Mariner's Compass

The introduction of the mariner's compass [illegible] enabled ships to go on long sea voyages and the [illegible] century saw the beginning of those long voyages of exploration which culminated in the great discoveries by Vasco da Gama, Magellan, Columbus and the Englishman Cabot.

It was these long sea voyages as will be seen later that gave rise to [illegible] that great scourge of seamen for the next 300 years.

The coppering of ships' bottoms began in 1761. It enabled ships to remain at sea much longer.

Steam

The last great factor which had a great influence on health was the introduction of steam power in ships in the nineteenth century. It lengthened voyages and led to improvements in living conditions, especially in the tropics. There was an immediate fall in the death rate at sea. The use of steam spread gradually to the development of the iron ship entirely propelled by steam, and this gave rise to certain problems of ventilation because of the necessity for watertight compartments separated by bulkheads, and also from the [illegible] powerful conductors of heat and cold.

Finally, the use of oil fuel abolished the coal-burning ship and brought improved cleanliness.

Conditions of Life Afloat

Such then were the factors which have governed ship design and development which in turn have been such potent influences affecting the health of the sailor. What were the conditions of life at sea in those long ago days in the wooden ship before the introduction of steam?

Though little as late as 1765 a tour of H.M.S. *Victory* will give a good idea of conditions, and little imagination is needed to appreciate what life was like on long sea voyages and commissions and how health suffered.

Except for the upper deck all other decks—the lower (main), middle and orlop decks were enclosed and the only ventilation was by hatches and gunports which could only be opened in fine weather. Windsails were also [illegible] and helped in some extent. Lighting was by candle. The ships company was accommodated chiefly on the gun decks. The orlop deck was below water level and so had no ports, and here were accommodated some of the midshipmen and the surgeon's mate, who was very small fry in those days. Tobias Smollett served as a surgeon's mate in H.M.S. *Cumberland* in 1739 and has vividly described his experiences in Roderick Random. Below this deck were the holds for stores and the bilges where water stagnating and foul with decomposing vegetable matter accumulated.

Animals were sometimes kept on board and the smell of these added to the emanations from the round house must have been unpleasant to say the least. New construction timber sweated badly and open braziers used in an attempt to dry the decks added fumes to the vitiated atmosphere. Humidity must have

been very high and there were no means of [illegible] An eye witness described the routine of life at sea in bad weather

> "During such furious storms the spray of the sea is [illegible] the wind is dispersed all the whole ship so that people breathe as it were at [illegible] many weeks together The continuous waves incessantly breaking upon the [illegible] and wetting those who are upon duty as if they had been drenched in the [illegible] also continually sending down great quantities of water below which makes it the most uncomfortable lodging imaginable and from the labouring of the ship it constantly leaks down in many places directly upon their beds There being no fire [illegible] to dry or exhale the moisture and the hatches necessarily kept shut this must [illegible] ing confined air below becomes most offensive and intolerable When such weather continues long attended with sleet and rain as it generally is we may easily figure to ourselves the condition of the poor men who are obliged to sleep in their clothes and damp beds the deck swimming with water below them and their [illegible] remain only four hours at a time till they are again called up to fresh fatigue and hard labour and again exposed to the washing of the sea and rains

There was severe overcrowding between decks and hammocks had no space between as only fourteen inches were allowed between the clues Rats abounded As recruits to the Navy were largely impressed men no leave was granted to prevent running The only consolation was that in home ports so called wives were allowed on board but they brought drink and venereal disease with them Punishments were appalling—flogging was a daily occurrence and keelhauling not infrequent The diet consisted chiefly of salt beef or pork ship's biscuits beer and occasionally cheese and butter There were no fresh provisions except on rare occasions and after a short while at sea butter became rancid and uneatable and biscuits alive with weevils. Water taken on board in casks rapidly became foul Pay was negligible and a levy of 6d a month was demanded to the Chatham Chest for the treatment of sick and wounded

Large complements were accommodated not only to man the ships for fighting as well as sailing but also to allow for inevitable wastage from sickness and death A first rate carrying 100 guns or more and varying from 2 000–6 000 tons might have a crew of nearly 1 000 men Third rates with between 60–80 guns might have 750 men and fourth rates with 50 guns a crew of 350 men It was estimated that in a 60 gun ship one-quarter of the complement would fall sick in an epidemic disease In a bigger ship the proportion might be one third of the total complement

This then is a brief sketch of conditions of life at sea in the old wooden sailing ships which endured long periods at sea in all weathers and climates with few and uncertain opportunities for replenishing food and getting a run ashore Conditions can be epitomized in the words of Dr Johnson Why Sir no man will be a sailor who has contrivance enough to get himself into gaol for being in a ship is being in a gaol with a chance of being drowned!

Sea Diseases

Let us now consider some of the great sea diseases and causes of ill health at sea and the means of prevention and those pioneers in naval preventive

medicine wh[illegible] much to improve [illegible] preserving health. [illegible] constitution was not the [illegible] whole nation [illegible] contributed thro[illegible] great a sea mission were we[illegible] that half the adult p[illegible] employed at sea or at the great ports in maritime [illegible]. At the [illegible] eighteenth century it has been estimated that the proportion of [illegible] in the nation was as great as 1 133[1]

Scurvy

Scurvy was the scourge *par excellence* of sailors right up to the end of the eighteenth century. So prevalent was it that it can be considered as one of the occupational diseases of seamen in those times. The incidence was largely dependent on the length of sea voyages and the long periods of blockades in wartime. It affected the men more than the officers as the latter were able to supplement the meagre diet. On Vasco da Gama's voyage to discover a passage by the Cape of Good Hope to the East Indies in 1497 one hundred out of one hundred and sixty men were lost from the disease. In Anson's voyages round the world the *Centurion* in 1741 buried 292 men and had only 214 of her complement remaining and in the *Gloucester* two thirds of the crew died.

The great debt owed to the naval surgeon James Lind for his pioneer work in the prevention of scurvy is well known. Lind entered the Navy in 1739 and during his years at sea engaged upon a series of critical observations and experiments on the causation prevention and treatment of the disease. Scurvy had of course been recognized for a long time before and the value of fresh fruit including oranges and lemons and fresh vegetables as a cure had been recognized by various captains of ships as well as naval doctors. For instance Sir Richard Hawkins at the close of the sixteenth century and Captain Lancaster employed by the East India Company in 1601, used lemon juice as a preventative, and Richard Woodall a surgeon to the same company in his book "Surgeon's Mate" advised the use of lemon juice as a preventative and cure.

There was however no universal agreement on the cause or the means of prevention of scurvy and agents such as humidity polluted air and cold were all considered to be potent factors and as important as inadequate diet. The forms of treatment were also very various.

It was not until 1747 that Lind, while serving as a surgeon in the 74 gun ship *Salisbury* carried out a controlled experiment—a model of its kind—that demonstrated once and for all that orange and lemon juices were specific in the treatment of scurvy. This work he elaborated and recommended the means of prevention and advised methods of preserving the juices of fruits and other foods for use at sea. In spite of this clear demonstration of the cause of scurvy however, it was not until much later that Lind's recommendations were generally adopted. His handbook "A Treatise on Scurvy" was published in 1754 but not until forty years later were administrative measures taken by the Admiralty to put his recommendations into effect.

Typhus [illegible]

Fighting [illegible] ships, [illegible] Newgate [illegible] and [illegible] in 17[illegible] a crew [illegible] fell [illegible] to typhus [illegible] again [illegible] bad smells and confined spaces were thought [illegible] and fumigating by sulphur the remedy

The transmission of the disease by the body louse from person to person was not discovered until 1909 by Nicolle, but Lind, with remarkable acuteness of observation, had realized the connexion between bodily uncleanness and dirty clothes, and made the following pertinent recommendations to prevent the spread of the disease. I quote his own words.

> The most effectual precaution [illegible] during a press would perhaps be to appoint a ship [illegible] suspected persons before they are admitted into the receiving guardships. These ships should be furnished with [illegible] from the [illegible] which [illegible] that could readily be [illegible] shirts, bedding, and all the necessary articles of seamen's apparel, with [illegible] and proper conveniences for bathing, and with a room upon deck for [illegible] of clothes. [illegible] suspected persons, whether impressed at sea or on shore, should be first put on board [illegible], however, should be short, as [illegible] they are stripped [illegible] washed and cleaned, they should be supplied with clean clothes and bedding, and [illegible] the receiving guardships. [illegible] apparel [illegible] might be [illegible] if necessary [illegible] with brimstone, and returned [illegible] necessary [illegible] rags and all such [illegible] brought from Newgate or other prisons.

What an admirable exercise in hygiene, and what a valuable contribution to public health!

Pulmonary Tuberculosis

Pulmonary tuberculosis has long been recognized as an occupational disease of seamen. Gilbert Blane, another of the great pioneers of naval preventive medicine, remarked in 1830 that pulmonary inflammation, and especially pulmonary consumption, were the chief sources of sickness and mortality in the fleet at that time. The cause was of course the confined spaces in which the sailors were accommodated, with little ventilation and light, and often gross overcrowding and little hygiene. The incidence at that time was about 8 per thousand per annum. With better living conditions and diet, and a higher standard of health required on entry, the incidence in the middle of the present century was happily reduced to about 2 per thousand, even then it was about double that in the Army or Royal Air Force. The incidence among officers was less than half that in ratings. There has been a further big reduction and now it is very doubtful if the disease can any longer be called an occupational disease of sailors.

Tropical and Semi Tropical Diseases

Malaria

It is difficult to say what were the actual causes of the high mortality from continued, remittent and intermittent fevers into which febrile [illegible] classed in former days but undoubtedly malaria must have been [illegible] Though not actually describing malaria Lind's advice on the prevention of tropical fevers is very pertinent He observed that places situated near the mouth of a river with low muddy banks were dangerous especially when the air was full of insects and "animalcules" These were sure signs of the malignant disposition of the place This was going a good deal further than the malaria (bad air) thought to be the principal cause of tropical fevers at that time and which has given a name to the particular disease in question The present sickness Lind makes the following fundamental observations— When ships are necessarily obliged to put into such unhealthy parts the first precaution is to anchor at as great a distance from the shore as can well be done and to prefer the open sea, where the anchorage is safe to running up rivers or bays carbuscil with the land the higher ships went up these rivers upon the coast of Guinea the more sickly they became such however as keep two or three leagues at sea beyond the reach of the land breeze are for the most part healthy" In his Essay on Diseases Incidental to Europeans in Hot Climates Lind recommended that small doses of cinchona bark should be taken daily to prevent fever

Another naval surgeon Bryson later destined to be Medical Director General in his Report on the Climate and Principal Diseases of the African Station in 1847 realized that the outbreaks of fever had nothing to do with lack of cleanliness and improper ventilation of ships which had formerly been considered factors Following Lind's precepts he advised that If boat services were in some degree restricted if prize crews were not permitted to land at Sierra Leone and if all vessels contracting epidemic disease were to leave the station and proceed direct to a cooler climate the rate of mortality and the permanent loss of health one year with another would be reduced at least nearly a half He further recommended No boat shall remain absent over night were this regulation instituted and adhered to it is confidently asserted it would do more to reduce the mortality and sickness of the squadron than perhaps all other means of prevention put together

The advice of Lind and Bryson is of course as true today as it was then and is a sheet anchor of naval preventive medicine

But in the last war these underlying principles were sometimes forgotten and at Freetown when 100 merchant ships were there at one time in a grossly overcrowded anchorage when normally there were only two or three which favoured mosquito spread there was a high incidence of malaria before full anti malarial precautions were taken Now unfortunately the use of suppressive anti malarial drugs in a similar way as reliance on insecticides against disease carrying insects may be a temptation to ignore the principles of prevention Resistance by living organisms to chemical compounds is an ever growing menace

Malta Fever

Mediterranean or Malta Fever now known [illegible]

In 1814 Burnett who later became the first Medical Director [illegible] Navy wrote a treatise entitled 'A practical treatise on [illegible] Medical Boards [illegible] as it appeared in the ships and hospitals of H.M. [illegible] Stores and Guns and Dissections'

Though there is some doubt if the disease described by Burnett was in fact true undulant fever he was the first to use the name Mediterranean Fever and his work may be the first published on the disease.

Until as late as 1906 Mediterranean Fever continued to be a potent source of sickness in the Fleet when as the result of Bruce's work the causal organism was isolated and its mode of propagation through goat's milk recognized. In 1906 their Lordships gave the order 'Drink no more goat's milk' and Mediterranean Fever which since the days of the Crimea had decimated the garrison and fleet stationed at Malta suddenly ceased within a year.

Yellow Fever

In ships operating off the coast of West Africa and South America Yellow Fever produced a terrible mortality and the whisper of 'Yellow Jack' brought terror to sailors. It was a scourge at Bermuda from time to time until the latter part of the nineteenth century. At the naval hospital 1 047 cases were admitted in 1843 and 295 cases in 1864 with a mortality of 22.7 per cent. Bryson describes this one of the most distressing features of the disease was the depressing effect on morale and the spread of the disease had a most demoralizing effect on the ship's company. Convinced that it was contagious they refused to help in case the sick for there were no sick berth staff in those days and nursing was done by volunteers among the crew.

Naval surgeons to their credit did not subscribe to the theory of contagion and the most courageous example in demonstrating this belief was that of Surgeon McKinnal. This is what a brother surgeon wrote of his example. 'To [illegible] as much as possible the state of general mental depression and convince officers and ship's company that the disease was not contagious Dr McKinnal directed me to collect some of the vomit from the first patient who was attacked with that fatal symptom accordingly I collected about a pint of it from a man called Riley I think about two hours before he died. Shortly after this the doctor came up to the starboard side of the half deck when I told him what I had done. He went down to the gun room about half past twelve o'clock (the men then being at dinner) returned with a wine glass. Mr Green the officer of the forenoon watch was then going below when he called him over and filling out a glassful of the black vomit asked him if he would like to have some of it being answered in the negative he then said "Very well here is your health Green" and drunk it off. There were no other persons actually present but those men on duty on the deck at the time and it became the theme of conversation all over the ship during the afternoon. Dr McKinnal immediately afterwards went to the quarter deck and walked until five o'clock to prevent

is [illegible] supposed that he had resorted to any means of [illegible] effects This took place in February 1830 when the ship was cruising off Lagos about 180 miles from land The account concluded with the statement— It is almost unnecessary to add that it did not impair his appetite for dinner nor did he suffer any inconvenience from it afterwards ' McKinnal was not just a brave man demonstrating relief but he was also clear minded—he had noted that the epidemic ceased abruptly upon a certain time when 40 men were on the sick list and when the matter of contagion (if it existed) must surely have been at its height.

The prevention of Yellow Fever was of course to follow Lind's and Bryson's advice and anchor well off shore and avoid boat work up rivers

Enteric Fever and Dysenteries

Enteric Fever and the dysenteries doubtless produced a high mortality and morbidity but there is no means of differentiation as all disorders of this nature were included under the heading of Flux Returns of sickness in those times were headed under Fever Flux and Scurvy Later differentiation was made into fluxes with fever including dysentery and catarrh and under nervous diseases was included spasmodic diseases including diarrhœa colic cholera and epilepsy' The true incidence of these diseases is therefore impossible to assess

Other Developments in Naval Hygiene

I have touched on some of the great sea diseases and the contribution made by naval doctors to their ætiology prevention and cure Let us consider the development of some measures of naval hygiene

The provision of a fresh water supply at sea was always a great problem Distilled water to supplement the supply carried in casks had been in use prior to 1761 but the process involved the use of chemicals which were thought to be essential In that year Lind invented a simple still and condenser though he was later denied the credit for the invention which was given to a Frenchman and another naval surgeon Dr Irving—who received a reward from Parliament As a result of Lind's invention a 20 gun ship H M S *Dolphin* in 1778 made a voyage round the world relying solely for her water supply upon distilled water Today solar stills are used for this purpose as part of the life-saving equipment for rafts Lind also suggested a simple method of filtration by the use of two casks one within the other and partially filled with sand

In connexion with his recommendations for clean clothes Lind advised a naval uniform—he said 'If the seamen of His Majesty's Service were put into a uniform sea habit with some little moveable badges or ornaments by which it might be known to what ship they belong they would start clean and be kept clean'

It was Lind too who was the first physician to state clearly the consequence of leaving the final decision in health matters in the hands of unqualified authorities In an essay on tropical climatology he writes A total ignorance of these important matters or inattention to them are in Commanders in Chief blameable and the lives of thousands may be lost by it' He went on to point out that—

[illegible] sacred and indispensible [illegible] of Commanding Officers consists in enforcing the means of preserving health. I shall refer to this fundamental principle later on when I say something of the lessons of the last war. Note Lind's phrase 'preserving the health' and not preventing disease which by modern concepts is nowadays considered to be the chief function of the medical profession. Lind also advocated adequate space between patients in Sick Bays, frequent washing of Surgeon's hands, frequent changing of his linen and rushing down of compartments where infectious cases had been nursed. Many of Lind's precepts were incorporated in another great work written in 1757—An Essay on the most effective means of preserving the health of Seamen in the Royal Navy—which laid the foundations of naval hygiene.

Trotter was another of the great names in naval medicine in the eighteenth century. He was a firm disciple of Lind's and called him 'The Father of Nautical Medicine'. Besides many original observations on scurvy among which was that preserved juice of lemons was very inferior to the fresh fruit in preventing scurvy—a point which had puzzled people for some time—he did a great deal to improve living conditions for the sailor, especially in improving the diet. He urged that Lind's anti-scorbutic measures should be extended to the mercantile marine and this was perhaps responsible for earning the British their common nickname in America of 'Limeys' (lime juicers). He also had a plan for purifying water by clearing the interior of casks. In his 'Medicina Nautica' he gave a full account of the health of the Fleet between 1794–8. Perhaps Trotter's most important contribution was the support he gave to Jenner in his campaign against smallpox. He was probably the first to introduce vaccination into the Navy. Under his direction it was used as early as 1798 though it was not made compulsory until the latter half of the nineteenth century. So satisfactory were these early results in the Navy that naval surgeons presented Jenner with a gold medal.

The first great name in naval medicine of the century was Gilbert Blane who I have already mentioned in connexion with pulmonary tuberculosis. Blane did not himself introduce many innovations but had it not been for his powerful advocacy in high quarters Lind's and Trotter's recommendations especially in connexion with scurvy would have taken much longer than they already had before they were eventually adopted by the Admiralty in 1795. Until then only a few enlightened executive officers such as Captain Cook had made the health of seamen their especial concern and had adopted Lind's measures for preventing scurvy.

Soon after he qualified Blane secured introductions to London society and this led to Admiral Rodney inviting him to accompany him as his personal physician on board H.M.S. *Sandwich*. Blane made the most of his opportunities and Rodney gained such a high opinion of his abilities that he appointed him Physician to the Fleet. In this capacity he was able to institute numerous reforms which included all Lind's recommendations to whom he always gave due credit. Through his Memorial to the Admiralty and his 'Observations on the Diseases of Seamen' Blane was able to persuade the Admiralty to adopt those

principles of preventive medicine by which the incidence of disease fell so dramatically in the next century

Blane said that one of the most impressive arguments that influenced the Admiralty to issue lemon juice in preventing scurvy was the voyage of the *Suffolk* in 1794 to India which took twenty three weeks The crew was issued with 2 3 oz of lemon juice daily and they arrived at Madras without one death and no cases of scurvy When a year later the First Lord visited Portsmouth and asked to see the pitiful victims of scurvy at Haslar he was informed there were none. By contrast sixteen years before 2 400 cases had been put ashore from the Fleet after ten week's cruise in the Channel In his "Brief Statement of the Progressive Improvement of the Health of the Navy' addressed to William IV in 1830 Blane wrote "The Scurvy has been extirpated and the means of counteracting fevers has so far attained that they can never prove a serious evil under such vigilant, zealous and intelligent commanders and medical officers as now belong to the naval service' With such tact Blane was able to achieve what he wanted'

Elsewhere he described how the endorsement of Lind's rules enabled a fleet of the same striking force to be maintained at sea with half the number of ships and Robert Finlayson a naval surgeon, wrote 'It is the opinion of the most experienced officers that the blockading system of warfare which annihilated the power of France could never have been carried on unless sea scurvy had been subdued ' Such was the value of Lind's work to the Navy and the nation

Blane's Memorial to the Admiralty which had the full support of Rodney included the following principles for improving health

(1) Cleanliness and dryness of ships and regular inspection by officers
(2) For the prevention of scurvy Every 50 oranges and lemons might be considered as a hand to the Fleet
(3) Adequate necessities for the sick
(4) Free supply of certain drugs and medicines (until then paid for by naval surgeons)
(5) Better arrangements for the conduct of naval hospitals
(6) Fresh soap to seamen (this was not supplied till 1810)
(7) Removal of Sick Bays in ships to a better position under the forecastle

Blane could at times be outspoken and he did not hesitate to castigate the Admiralty upon their failure to shoulder the responsibility for health measures and said that the oversight for not carrying out all available measures to preserve the health of seamen was not imputable to the inhumanity of those who conduct the Navy and the Civil and Military departments but to that error of judgment by which they conceive that all that concerns the health of the man lies in the department of the medical officers and that if they take care and provide professional gentlemen, possessed of due skill and furnished with an adequate assortment of drugs and instruments they stand absolved from all further responsibility in what regards the health of the mariner'

Land Trotter Blane and others I have mentioned were great pioneers. As Macdonald Critchley said in his Croonian lecture of 1945— Sea Surgeons during the eighteenth century were in many respects well ahead of their colleagues ashore and their observations were pioneer efforts in preventive medicine. The work of these three men, with their great contemporary, the Army physician Sir John Pringle, led indirectly to the development of the Public Health Service ashore.

Developments in the Nineteenth Century

There was an enormous decline in the incidence of sea diseases in the nineteenth century—so great that before its close sickness had fallen to almost the low level it stands today.

The proportion sent to hospital in all parts of the world in 1782 was as high as 1 3·3 in 1795 it was 1 4 but by 1813 it had fallen to only 1 10·75, which is one-third of the sickness prevailing in 1782. There was an increase in 1819 to 1 8·8 and in 1829 to 1 8·9 but this was due to the great prevalence of Yellow Fever at the time. In the Health of the Royal Navy of 1862 it is stated that "a very large proportion indeed of the sick rate in the Royal Navy is derived from boils abscesses ulcers and injuries of a more or less trivial nature and from simple catarrhs and sore throat and that the ratio of sickness from disease properly so called is in reality very small."

The death rate likewise fell dramatically and continued to fall in the next century as the following table shows:

	Average death rate for 1 000
1856–1860	14·34
1861–1870	8·27 (introduction of the iron ship)
1871–1880	5·86
1891–1900	4·19
1924–1926	1·51

Even as early as 1800 when the Fleet blockaded Brest it consisted of 24 ships of the line besides smaller vessels under Lord St. Vincent and kept at sea from 27th May till 28th September without one of them being in port. The history of the fight against disease at sea clearly shows how it was the great improvements in naval hygiene and preventive medicine rather than the advances in clinical medicine that reduced mortality and sickness but during the nineteenth century several other important factors were operating.

These were:

(1) Fewer wars during this century and a consequent reduction in the naval force.

(2) Changes in the method of recruitment. After 1815 impressment as such ceased and was replaced by voluntary recruitment continuous service in 1823 and so many of the hard restrictions such as no shore leave could be abolished.

(3) Many of Blane's recommendations were brought into effect such as improved cleanliness and inspection by Commanding Officers already mentioned.

(4) Thorough cleansing of clothing of men suffering from infection
(5) By 1815 water was stored in iron tanks which were cleaned and white-washed inside
(6) Victualling was reorganized and catering taken out of the hands of private contractors and controlled by a Director of Victualling. The art of canning was first tried out in the Navy in 1914 and fresh beef and vegetables added to the diet. Salt beef and pork were only issued when these were not available. Fresh bread was substituted for biscuits and allowances of tea, sugar and chocolate made. The spirit ration was reduced, formerly the issue was beer but when this was not available each man received ½ pint of spirits in lieu in the form of brandy or rum. This was reduced to ¼ pint in 1825 and again to ⅛ pint in 1850. Sick messes and medical comforts were instituted in 1835.
(7) The introduction of steam into ships was through the stages of sailing ship and auxiliary steam, engine composite wood and iron sailing steam ship, all iron sailing steamship and finally the iron ship propelled by steam alone. The introduction of steam led to great improvements. The old windsail and fixed cowls fitted in the latter days of sail were inadequate and the steam fan provided a far better means of ventilation. Cold storage compartments became available and steam ensured an adequate supply of drinking water by distillation and a better system of heating. Later the development of electrical power has provided good lighting, improved heating and the modern system of ventilation by the plenum system.

Small outbreaks of scurvy persisted from time to time in the nineteenth century still due to ignorance but also to the unfortunate substitution of limes for lemons. From 1860 preserved lime juice was made the official anti-scorbutic and this led to a serious outbreak in 1875 in the *Alert* and *Discovery* in the Arctic. To bring the long story of scurvy up to date I should add that even during the last war there were reports of preclinical or subclinical states of scurvy among some ships, especially submarines on long patrols in the Arctic when no fresh provisions could be provided. An investigation however showed that all the cases of bleeding gums reported were in fact due to Vincent's angina and there was no evidence of scurvy. The lemon and orange juice now issued to the Navy is fortified with ascorbic acid up to 0·4 per cent. And finally it was a naval surgeon who gave his name to a well known drink when he persuaded naval officers to put lime in their gin and it has been called a Gimlette ever since though frequently misspelt in clubs ashore!

Careful statistics of the incidence of disease were now being kept and were issued regularly as reports on the Health of the Navy. Gilbert Blane termed "A Brief Statement of the Progressive Improvement of the Health of the Royal Navy at the end of the eighteenth and beginning of the nineteenth centuries" which was published in 1830.

Reports on the "Health of the Navy" by John Wilson for the years 1840–1856 was published in 1841. In this the incidence of disease was given separately

for the different commands at that time the South American, West Indian and North American Mediterranean and Peninsular Commands

In this report Wilson gives perhaps the first instance of industrial disease in the Navy, when he describes the methods of cleaning decks He writes

"The ordinary methods employed are washing wet and dry stoning In the first, large quantities of sea water with friction by brushes is used in the second a small quantity of water is poured on the decks, which are then diligently rubbed with smooth flat stones generally of sandstone designated holy-stones by the seamen, for the purposes of removing stain spots grease etc In the third the same kind of stones are used for rubbing but instead of water they are applied directly on the decks ' Wilson goes on to comment on the objections to wet washing between decks but also observed when very friable (sometimes calcareous) stones are employed a good deal of dust is disengaged in the process which irritates the eyes settles on the clothes and insinuates itself into the chests bags etc, and is therefore to a certain extent annoying He is of course referring to the sea chests of seamen and not to the lungs, but considerable dust must also have been inhaled

Wilson had some very modern notions on the concept of social medicine and the reaction of the mind on health He considered that a happy and cheerfully occupied state of the mind was conducive to the preservation of health, while gloom and discontent, the offspring of the want of innocent and healthy occupation lead to its subversion He thought that more was needed in the training and instruction of the mind than issuing Bibles Prayer Books and religious tracts About this time libraries were in fact established in ships and a fit person appointed to give elementary education Wilson concludes his report The time has passed when utter ignorance of everything but his immediate duty, with all the debauchery and destructive effects of savage ignorance is thought essential to the character of a British seaman—implicit obedience indomitable courage and love of country

The close of the eighteenth century and the nineteenth century were indeed remarkable for changes in conditions of life for the seaman and the great fall in the incidence of disease As early as 1840 Wilson wrote Of the many improvements which have taken place within the last 30 years in the physical and social condition of the people none is to be compared with that effected in the health of seamen in the public service because none approached it in magnitude and importance Stressing this wider aspect of medicine Macdonald Critchley in his Croonian Lecture in 1945 said 'Naval medicine can be visualized as the closest approximation to what we now choose to call social medicine for in the Service the total environment of our personnel comes under the close study and care of the medical branch"

Modern Era. Lessons of the Last War

And so we come to the present century which has seen continued progress in conditions of life for the sailor afloat and ashore, and a continued though lesser fall in sickness

Early in the century however, epidemics of certain infectious diseases gave rise to concern and one in particular was diphtheria now so rarely seen. At the Royal Hospital School, Greenwich between 1919 and 1927 there had been no fewer than 385 cases, mostly concentrated in two major epidemics. At that time artificial immunization had not been started and it was Sheldon Dudley who later became Medical Director-General during the momentous war years who used the material for initiating his well known studies of herd immunity. A scheme of immunization resulted in complete disappearance of recognizable diphtheria. It was Dudley's success at Greenwich and the observations made concurrently in fever hospitals and elsewhere that diphtheria could be virtually abolished even when exposure might be constant and intensive which undoubtedly influenced the authorities in their decision to introduce the national immunization campaign in 1940. Dudley's work on herd immunity was fundamental and he contributed much also to the epidemiology of typhoid and rheumatic fever both of which diseases gave rise to concern in the Navy from time to time. For his contribution to national as well as naval preventive medicine Dudley was elected F.R.S.—the first naval surgeon to receive this honour since T. H. Huxley in 1851[1].

The stimulus of the war years led, as is well known, to major advances in the field of preventive medicine such as the development of insecticides, suppressive anti-malarial drugs, methods of immunization etc. all of which aided the Navy to maintain fighting efficiency. The role of preventive medicine in war is paramount, when sickness from preventable disease at any rate in tropical and semi-tropical countries is always infinitely higher than battle casualties.

For example the ratio of preventable diseases and battle casualties in the earlier phases of the Japanese war exceeded 100 : 1 in some theatres of operations. In Burma by improvement in malaria discipline and the advent of D.D.T., the ratio of sick to wounded dropped from 120 : 1 in 1943 to less than 20 : 1 in 1944. The consultant physician to South East Asia Command estimated that four fifths of the sickness in that theatre was preventable. "One medical officer" he said "engaged on hygiene can save the work of ten medical officers in hospital!"

The Navy by virtue of past experience and the many improvements in life at sea thought they would be relatively immune from sickness but had a very rude shock with the introduction of amphibious warfare and the establishment of naval bases and airfields ashore in malarious countries when they had to leave the security of life at sea. Other problems arose from the rapid expansion of armaments and gadgets which had to be fitted into the inelastic hull of a ship built many years before. To work these extra machines required a great increase in complement which led to overcrowding. Added to this the necessity for manning and fighting ships for long periods at sea in all climates under wartime conditions of blackout and damage control. Dudley summed up the problem by posing this question. What is the ratio of the space allotted to the human element to the space allotted to the mechanical

element of the total fighting machine (ship plus ship's company) which will make it the most efficient engine of war?

To study this and other problems and to achieve quick results in which mechanics seamanship, physiology and preventive medicine were all involved, a Royal Naval Personnel Research Committee was set up This was a Medical Research Council Committee and had as members civilian physiological and medical experts, representatives of the executive and technical departments of the Navy as well as the medical branch

The terms of reference of the Committee were To advise the Medical Research Council on such investigations as the Council may be asked to undertake on biological medical and psychological problems affecting the health and the fighting efficiency of R.N personnel and to suggest investigations with a view to increasing or improving the health fighting fitness and environment of naval personnel and to aid and supervise such investigations as expedient

The problems concerned were conditions in submarines diving habitability in ships and climatic efficiency and visual problems

Note how developments in these fields can no longer be achieved by the doctor alone but are dependent upon a team of experts—engineers chemists physiologists psychologists etc as well as the doctor

The results achieved by the R N P R C and the various sub-committees appointed under it were considerable and enormous improvements followed in ventilation air movement air conditioning (the good effect was particularly felt in submarines) better amenities and better conditions in ships compressed into those two horrible words airconditioning and tropicalization Much experimental work was done at Cambridge and the hospital for nervous diseases at Queen Square London on environmental warmth and efficiency This work was continued after the war under Surgeon Commander Ellis at the tropical research institute at Singapore. Though this unit has closed work continues at Cambridge Short and long term experimental work was and still is being undertaken with the object of defining the limits of habitability in which a man can remain 100 per cent fit The particular problems in connection with aviation medicine were also closely studied

Mention must also be made of the pioneer work of the Navy during the war in the field of mass fluorography with the development—the first in this country—of static and later a mobile unit This was one of the great developments of preventive medicine in the Navy during the war and has considerably affected the incidence of pulmonary tuberculosis Indeed evidence now suggests that as a result, naval tuberculosis is controlled This institutes perhaps the most important advance in naval medicine in this century and is an outstanding vindication of Dudley's advocacy of fluorography in the Service

Improvement in habitability in ships is actively pursued today and a very recent Admiralty Fleet Order gives an impressive list of amenities which are to be introduced ranging from air conditioning of all living spaces to sockets for electric razors! But space is always a critical factor In past years when the armament of a ship consisted of heavy weapons with a simple form of control

the ship had to be so big simply in order to float that there was plenty of room for the ship's company. Now the armament consists of a few high precision weapons with a large amount of relatively light but bulky control equipment with the result that the space required for the accommodation of the ship's company is a critical factor influencing the design characteristics of a ship and in consequence has a bearing on health.

It was fortunate indeed that in the critical war years there was at the medical helm Sheldon Dudley whose direction of all the activities I have mentioned from the medical aspect was that of a first-class scientific brain. Perhaps his most outstanding contribution in the war was the advice he gave to Mountbatten on the control of malaria and dysentery which contributed so largely to the success of the Burma campaign. Let me quote some of Dudley's axioms:

(1) Broadly speaking naval personnel need not worry about hygiene as long as they remained in their ships. H.M. ships being self contained units in which health measures have been so carefully organized over the course of years that naval officers and ratings have come to accept them as a matter of course. Provided the instructions concerning health and sanitation were observed it should be impossible to obtain bad food or water.

(2) For generations the seaman has unwittingly observed the fundamental law of keeping his ingests apart from his egests by passing his excrement straight over the side of the ship into the sea where it cannot possibly pollute food or flies.

(3) His ship has always been the sailor's home accompanying him wherever he goes, granting him facilities for cleaning himself and his clothes, which are never enjoyed by a soldier in the field and allowing him changes of clothing which are automatic safeguards against lice and typhus.

(4) As long as he remains in his ship the sailor can avoid contact with the primitive countries which are the chief reservoirs of many of the infectious diseases as well as avoiding infection from insects which travel far from shore across water.

But note the danger to the Navy when forced to go ashore as in airfields, landing parties and shore establishments in the Tropics. Also the good ship conditions only exist so long as unremitting care to see the proper conditions permit and that is one of the jobs of the doctor. But the doctor is helpless without sympathetic co-operation of his executive seniors.

Unfortunately this co-operation and the realization of executive responsibility in health matters is not always fully appreciated. At an inter-Allied conference on war medicine during the war Dudley stated categorically that 'Executive and Combatant officers must be taught that the enforcing of hygienic measures to preserve health, morale and fighting efficiency of their troops is as important as any other military duty'. One of the most important Fleet Orders issued during the war stated that Flag Officers and Commanding Officers were

responsible for ensuring that protective and preventive measures are undertaken and rigorously enforced The medical officer can only advise as he has no executive authority over officers and ratings except when they are on the sick list

As Gilbert Blane had once said A ship in the middle of the ocean is a little world within itself at the arbitrary disposal of an individual All seafaring people, especially those employed in war are exposed to peculiar and unavoidable privations hardships and dangers which ought to be mitigated as far as is practicable by those at whose absolute will they place their lives and limbs

Once again it was found necessary to remind Commanding Officers of their responsibility as Lind and Blane had had to do in the past

Dudley considered that educating the combatant officer to take hygiene seriously and the inculcation of malaria and hygiene discipline in sailors soldiers and airmen, is the most important duty of the medical officer in war and peace There can be no let up in our efforts to preach the gospel for again quoting Dudley— There is a terrible curse on preventive medicine in that no one realizes its necessity till a disaster arises as the result of its neglect ' or as Captain Cook that great naval hygienist said in an earlier century— Preventive measures are always invidious for when most successful the necessity for them is least apparent."

Industrial Health

There is one more aspect of preventive medicine which must be considered and without which this survey of the development of naval preventive medicine would be incomplete and that is Industrial Health

With an increasing "industrialization' of the Navy industrial health has become ever more important, and is it essentially preventive in its aim The development of ships for special purposes such as Repair Ships Maintenance Ships, Depot Ships etc and the continued introduction of a variety of processes and the use of compounds many of which have a potential hazard to health has turned ships into miniature factories with many of the same problems and some added ones peculiar to naval conditions as are met with in factories ashore. There is also the industrial health of the very large number of civilian workers employed by the Admiralty at the Royal Dockyards Armament Depots and elsewhere both at home and abroad which must be considered

Many developments of great importance have taken place in recent years to achieve a high standard in this field of preventive medicine among which is the formation of a cadre of medical officers trained in this speciality

It is the combination of this industrial aspect as well as the other environmental health factors in the sailor's life which comprise the concept of Occupational Health in the Navy

The developments in naval preventive medicine which have been outlined show clearly the great debt which the Navy and indeed the nation owes to those great pioneers not only among the doctors but the seamen as well who contributed so much to combating the great sea diseases of the sixteenth

seventeenth and eighteenth centuries and to improving the conditions of life at sea, and preserving the health of the sailor. Outstanding contributions have also been made in more recent time of which the Navy can be justly proud.

These contributions in preventive medicine however are not solely for the benefit of one Service. It was abundantly demonstrated in the last war that many of the problems affecting the health of the sailor, the soldier or the airman have much in common, and even with the general population especially perhaps the worker in industry.

It is essential therefore that there should be the closest liaison and co-operation between the Services and the civilian medical authorities. Indeed the Services are greatly dependent upon the facilities for research and the expert advice offered by specialists in the various fields of medicine which I have previously referred to. A problem is often a common one to all and requires a combined operation for its solution.

It is this relationship between the Services and the civilian medical authorities which is so happily exemplified in the United Services Section and the Section of Epidemiology and Preventive Medicine of the Royal Society of Medicine, and in this our Services Group of the Society of Medical Officers of Health.

Acknowledgment

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CASUALTY WORK IN CYPRUS

BY

Acting Surgeon Lieutenant-Commander H. J. A. HAHN, R.N.

During the eleven months from September 1955 to August 1956 40 Commando Royal Marines was engaged in operations against the Eoka terrorists in Cyprus.

The Medical Staff attached to the Commando consisted of one Medical Officer, one S.B.P.O., one L.S.B.A. and four S.B.A.s. As prolonged casualty work ashore does not often come the way of naval medical staff an outline of the work encountered in 40 Commando's area may be of some interest.

During our time in Cyprus 24 casualties passed through our hands and were due, either directly or indirectly, to terrorist activity.

	Bullet	*Shot gun*	*Bomb*
R.M. and Army	1	5	11
Police	2	0	2
Civilian	3	0	0

It is proposed to give a brief account of the weapons used by the terrorists, the system of evacuation and first aid used, and a survey of the varieties of wound encountered.

Weapons

(*a*) *Guns*.—Many types of gun were used by the terrorists including Bren, 303 and 202 rifle, Italian and German machine-carbines, Stens and pistols. In the early months of 1956 the use of shot guns became fashionable—apparently a favourite method of paying-off old scores in Cyprus even in normal times.

(*b*) *Grenades and Mines*.—By far the largest number of casualties was caused by explosive devices. These ranged from conventional hand grenades to a most ingenious assortment of home made bombs and "infernal machines".

The most plentiful raw material for bomb-making was iron water pipe, including the various junction pieces used with it, and most of the wounds were produced by fragments of this kind of bomb. The workmanship of these missiles was usually of a surprisingly high order and it is probable that the "arsenals" that produced them were hidden in mountain caves. On one occasion a folding work bench and a set of tools were captured intact by Security Forces in our area. The bombs were usually seored on the outside for fragmentation and these pieces together with some scrap iron in the filling formed fairly effective shrapnel. Fortunately the fusing was very often faulty and many bombs failed to explode. On several occasions too the careers of

promising young terrorists were ended by the premature explosion of their own weapons.

Electrically-detonated land mines were employed in the later months and were merely larger versions of the bombs buried in convenient pot holes in the road.

Time-bombs were sometimes planted in places frequented by Security Forces but, fortunately these rarely exploded at the most critical times.

First aid and Casualty Clearance

During the first four and a half months the Commando was stationed at Limassol where there was plenty of transport and hospital accommodation near at hand. Hence casualties which were at this time few were given preliminary treatment at the local civilian hospital. They were thence transported to the British Military Hospital at Nicosia by road. Only a few minor injuries resulting mostly from riots were treated at the Sick Bay as the camp was some distance from the centre of trouble.

In January 1956 40 Commando moved to the Paphos district at the Western end of the island. Here a very different and perplexing situation presented itself. The Commando was dispersed in four camps several miles apart and our small resources were required to give cover for an area almost a sixth of the whole island. It was the most sparsely garrisoned part of the island but the difficult roads and long distances made evacuation of casualties a disturbing prospect. The nearest Service hospital was the R A F hospital at Akrotiri 40 miles away. Helicopter evacuation was available, but only during daylight and as casualties were most likely to occur at night this was rather cold comfort. Our own medical transport was an Army pattern Box Ambulance and a ¼ ton Humber Champ fitted with a frame to carry two stretchers.

There were three principal landing sites for helicopters one near the town centre one near the camp on the outskirts of the town and one beside the H Q Camp nine miles away. S B A.s were attached to each camp and when the terrorism began to increase in Spring 1956 a half marquee was taken over as a Casualty Clearing Station at the camp on the outskirts of the town. Facilities for resuscitation and blood transfusion were installed here and the station was manned by two of the Sick Berth Staff.

Some Representative Cases

Bullet Wounds. No bullet wounds were seen in Royal Marines personnel but there were a few among attached Army and civilian population.

Case 1.—An Army Sergeant was seen by an ordinary military post about three quarters of an hour after attempting to commit suicide with a shotgun. The bullet had evidently been fired at a range of a few inches and had entered immediately below the left nipple. The patient was profoundly shocked and air was passing freely through the wound in both phases of respiration. An exit wound could not at first be found.

Two pints of "Dextran" and one pint of Group O blood from another soldier were given. During the transfusion the entry wound was sealed with adhesive plaster and collection and the general condition gradually improved. After about two hours the

casualty was considered fit to be moved and was subsequently discharged to B.M.H. Nicosia by helicopter. At thoracotomy a large haemothorax was found but the bullet had passed through the left chest without damaging any vital structure and passed out through a small slit below the left scapula. The patient made a good recovery.

Case 2.—A young terrorist aged 17 years was shot with an F.N. semi-automatic rifle while attempting to escape after throwing a bomb. The case was seen about twenty minutes after wounding and presented a very different picture from Case 1. Clinically there was only moderate shock. The colour was fair, pulse 120, B.P. 70/30. A wound about half an inch in diameter was present in the left side of the abdomen through which a loop of small intestine, about twelve inches long, had prolapsed.

One pint of Dextran was given and the prolapsed intestine enclosed in a protective dressing of saline gauze. The case was removed to the civilian hospital. At operation performed by the civilian surgeon an entry wound was found in the anus and there were multiple wounds of the intestines. Death occurred soon after the operation.

Case 3.—A middle-aged Turkish policeman was wounded in the head by a 9 mm. bullet. When seen, about half an hour after wounding, he appeared to be *in extremis*. There were entry and exit wounds in the occipital region and a large haematoma of the scalp between them. The patient was ashen, cold and delirious. The pupils were grossly unequal and fixed; pulse and blood pressure unrecordable.

As the incident occurred at night and the nearest Service hospital was two and a half hours away by road, the chances of survival appeared very bad. The dilemma arose as to whether it was better to send the case to hospital as soon as possible, or whether to give intravenous fluids in an attempt to improve the general condition. It seemed that raising the blood pressure by transfusion might lead to an increased intracranial haemorrhage and an even more certain death. However the latter course was taken after giving 10 c.c. of paraldehyde intramuscularly and the case was discharged to hospital. He survived the journey, and a piece of copper casing was removed from the occipital cortex at operation. When last heard of he was up and about, but was blind.

Shot-gun Wounds

Six cases of shot gun wounding were observed. In all cases the weapons were fired from a range of a few feet and the wounds were therefore very closely placed. The penetration was not deep, however, and no serious injuries were caused.

Treatment of these wounds proved rather unsatisfactory. The vast number of pellets (150 in one case) made removal out of the question, and it was necessary to adopt the pious hope that the lead would "work itself out"! In all the cases a few wounds became septic and the pellet was discharged from the abscess. Occasionally single pellets were removed under local anæsthetic because they were causing pain, but this was no easy task. It seems that unless the pellets are causing trouble "masterly inactivity" is the best course.

No shot-gun cases required transfusion although bleeding and pain were severe for the first half-hour after wounding.

Bomb Wounds

The largest group of cases was caused by bomb fragments. Up to about twenty feet the fragments from 'Water Pipe' bombs had considerable penetrating power, but at greater range their efficiency rapidly decreased. On one occasion a splinter was found to have pierced a Service steel helmet with the greatest ease. The blast effect was also considerable as the first case illustrates.

Representative Cases

Case 1.—A sergeant R.M., aged about 35, was caught in the vicinity of [illegible] bomb which exploded about ten feet behind him. He received two large wounds in the sacral region and lost much blood. He was given intravenous Dextran in the local civilian hospital and was transferred to R.M.H. Nicosia where laparotomy was performed. A large tear of the rectum was found, probably due to bomb blast entering the anus. A repair was carried out with temporary colostomy but death occurred on the ninth day.

Case 2.—A Marine aged 19 years was travelling in the back of a vehicle when he was hit in the left lower chest by a tiny bomb-fragment about twenty yards range. He showed no signs of shock and suffered very little pain. There was no vomiting. He was transported to hospital by road as it was dark where X-ray revealed the splinter in his upper abdomen.

At laparotomy a fragment about a quarter inch square was found to have passed through the left pleura without puncturing the lung. It had then pierced the diaphragm and entered the stomach after passing through both colon and loops of small intestine. The fragment was found buried in the posterior wall of the stomach. Repair and resection was carried out without colostomy and the patient made an uneventful recovery.

Conclusion

The role played by the Commando's Medical staff was necessarily a simple one. It consisted only in performing first aid and in some cases resuscitation and in arranging for evacuation of cases to hospital. Simple though our work was a number of points arose that may bear repetition.

Intravenous Fluids.—Great value was found in the use of plasma substitutes such as Dextran, in giving rapid intravenous therapy on the spot. The rough conditions and lack of facilities made cross-matching of blood impossible and the simple procedure of giving Dextran immediately was probably a life saving measure in some of our cases.

Although blood was given on one occasion (Case 1—Bullet Wounds) this was an extreme emergency and is not a risk to be taken in the field if plasma substitutes are available in case of a miss match.

Morphia.—The issue of morphia syrettes has given some cause for reflection. Much useful first aid can be done in the absence of medical personnel with a tube of morphia and a field dressing, but the wholesale distribution of morphia to officers and N.C.O.s is I think inadvisable. Firstly the ampoules tend to get lost, and secondly under emergency conditions a casualty is not at all unlikely to get two or even more doses from different individuals, however careful are the precautions to prevent this. It would seem adequate and safer to issue morphia only to the officer in charge of a detached party and to the S.B.A.

Evacuation.—The great value of air evacuation cannot be too highly praised. In roadless or mountainous districts it may be the determining factor between the survival or death of casualties and its value was proved on several occasions in Cyprus. The difficulty of landing a helicopter at night is the only serious disadvantage.

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CLASSIFIED MEDICAL REFERENCES IN THE WORKS OF SHAKESPEARE

BY

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PART XII

SQUINT

1442 *General* The eye that told you so look'd but a squint—*King Lear* v 3

(As we would say look sideways at something or as Milton put it And gladly banish squint suspicion.)

STAGE FRIGHT

1443 A dull unperfect actor on the stage
Who with his fear is put beside his part—*Sonnet* 23

STAMMERING

1444 *Rosalind* I would thou couldst stammer that thou might'st pour
this concealed man out of thy mouth as wine comes
out of a narrow mouth'd bottle—either too much
at once or none at all I prithee take the
cork out of thy mouth that I may drink thy tidings—
As You Like It iii 2

STARVATION

1445 *Timon* But let the famish'd flesh slide from the bone
Ere thou reliev'st the beggar—*Timon of Athens* iv 3

1446 *Imogen* now I think on thee
My hunger's gone but even before I was
At point to sink for food—*Cymbeline* iii 6

1447 *Launcelot* I am famished in his service you may tell every
finger I have with my ribs—*Merchant of Venice* ii 2

STERILITY

1448 *Caesar* Forget not in your speed Antonius
To touch Calphurnia for our elders say
The barren touched in this holy chase
Shake off their sterile curse—*Julius Caesar* i 2

(A reference to the Feast of Lupercal at which time the priests used to run through the streets practically naked and would strike with a thong any women who chose to present herself for that purpose in the belief that this would cure sterility)

1449 *Lear* Ioto her womb convey sterility
Dry up in her the organs of increase
And from her derogate body never spring
A babe to honour her!—*King Lear* I 4

1450 *Gloster* Would he were wasted marrow bones and all
That from his loins no hopeful branch may spring,—
Henry VI Part 3 III 2

1451 *Antigonus* I hope three daughters the eldest is eleven
The second and the third nine and some five
If this prove true they'll pay for't by mine honour
I'll geld 'em all fourteen they shall not see
To bring false generations—*The Winter's Tale* II 1

Stitch

1452 *Boyet* O I am stabb'd with laughter!—*Love's Labour's Lost* V 2

1453 *Maria* If you desire the spleen and will laugh yourselves
into stitches follow me—*Twelfth Night* III 2

1454 *Prospero* For this, be sure tonight thou shalt have cramps
Side stitches that shall pen thy breath up urchins
Shall for that vast of night that they may work
All exercise on thee thou shalt be pinch'd
As thick as honeycomb each pinch more stinging
Than bees that made 'em—*The Tempest* I 2
(urchins, mischievous sprites)

Subconscious

1455 *Banquo* Restrain in me the cursed thoughts that nature
Gives way to in repose!—*Macbeth* II 1

Suffocation by Crowds

1456 *Arte*
indorus Here the street is narrow
The throng that follows Caesar at the heel
Of Senators of Praetors common suitors
Will crowd a feeble man almost to death
I'll get me to a place more void—*Julius Caesar* III 4

Suggestion

1457 *Orlando* Thy conceit is nearer death than thy powers
For my sake be comfortable hold death awhile
at the arm's end
I will be here with thee presently and if I
bring thee not something to eat I will give thee
leave to die but if thou dost bellow when I come
thou art a mocker of my labour Well said!
thou look'st cheerly and I'll be with thee
quickly—*As You Like It*, II 6

Suicide

1458 *Bruno* she fell distract
And her attendants absent swallow'd fire—*Julius Caesar* IV 3

(Shakespeare is following Plutarch who said the death was due to her swallowing of burning coals The method is no more bizarre than the recorded cases wherein one individual thrust a red hot poker into his abdomen (*Dublin Medical Press* 1854) whilst another swallowed a red hot poke (*London Medical Times and Gazette* 1856)

1459 *Messala* How died my master Strato?
Strato. I held the sword and he did run on it.—*Julius Caesar* v 5
1460 *Hamlet* When he himself might his quietus make
With a bare bodkin.—*Hamlet*, III, 1
1461 *Edgar* set ratsbane by his porridge.—*King Lear* III 4
1462 *3rd Queen* Those that with cords, knives drams precipitance
Weary of this world's light have to themselves
Been death's most horrid agents human grace
Affords them dust and shadow.—*Two Noble Kinsmen* I 1

(precipitance, suicide jumping from a height. For burial of suicides see "Burial")

1463 *Coriolanus* we'll put you—
Like one that means his proper harm—in manacles
Then reason safely with you.—*Coriolanus* I 9

SUNBURN

1464 *Aeneas* The Grecian dames are sunburnt and not worth
The splinter of a lance.—*Troilus and Cressida* I 3
1465. *Venus & Adonis* The Sun doth burn my face I must remove
Line 186
1466 *Julia* She, in my judgement, was as fair as you
But since she did neglect her looking glass
And threw her sun expelling mask away
The air hath starved the roses in her cheeks
And pinch'd the lily tincture of her face
That now she is become as black as I.—*Two Gentlemen of Verona* IV 2
146 *Beatrice* Good Lord for alliance.—Thus goes every one to the world but I and I am sunburned I may sit in a corner and cry Heigh-Ho for a husband.—*Much Ado About Nothing*, II 1

(To go to the world was the equivalent for getting married as opposed to forsaking the world by entering a monastery. To be sunburnt meant to be forsaken without home or wandering at large. It is possible that the expression arose with that meaning from the sixth verse of the 121st Psalm which reads "The sun shall not smite thee by day nor the moon by night." In the Prayer Book version it is "shall not burn thee." This Psalm was formerly part of the service for the Churching of Women. Hence the derived meaning, that to go unburned was to remain childless. It is apparent that it was considered undesirable to be thus sunburned.

Gerard finds a remedy in the Narcissus. The same applied with honey and milk "doth help sunburning." The decoction of Oke Apples has "a somewhat wider field." Steeped in strong white wine vinegar with a little powder of Arsenicke used the root of Irees mingled together and set in the Sun by the space of a moneth maketh the haire blacke consumeth proud and superfluous flesh taketh away sunburning, freckles spots the morphew with all deformities of the face being washed therewith."

SURFEIT

1468 *King* For goodness growing to a pleurisy
Dies in his own too much.—*Hamlet* IV 4
1469 *Lysander* a surfeit of the sweetest things
The deepest loathing to the stomach brings.—
Midsummer Night's Dream II 2
1470 *Nerissa* for aught I see they are as sick that surfeit
with too much as they that starve with nothing. It
is no small happiness therefore to be seated in the
mean: superfluity comes sooner by white hairs, but
competency lives longer.—*The Merchant of Venice*, I, 2

1471 *Portia* In measure rain thy joy scant the excess
I feel too much thy blessing, make it less
For fear I surfeit!—*The Merchant of Venice* III ii

1472. *Claudio* As surfeit is the father of much fast —*Measure for Measure* I iv
1473 *Friar* the sweetest honey
Laurence Is loathsome to his own deliciousness
And in the taste confounds the appetite
Therefore love moderately—*Romeo and Juliet* II vi

1474 *Caesar* If he fall in
His vicancy with his voluptuousness
Full surfeits and the dryness of his bones
Call on him for it—*Antony and Cleopatra* I iv

1475 *Pompey* Tie up the libertine in a field of feasts
Keep his brain fuming Epicurean cooks
Sharpen with cloyless sauce his appetite
That sleep and feeding may prorogue his honour
Even till a Lethe'd dullness!—*Antony and Cleopatra* II i

Surgeons

1476 *Othello* Sir for your hurts myself will be your surgeon
Iago What me you hurt heretofore?
Cassio Ay past all surgery—*Othello* II iii

1477 *Cassio* O help ho! light! a surgeon!—*Othello* V i

1478 *Sir Andrew* For the love of God a surgeon—*Twelfth Night* V i

1479 *Sir Toby* Sot didst see Dick surgeon sot?
Clown O he's drunk Sir Toby to hour agone his
eyes were set at eight i' the morning—*Twelfth Night* V i

(Surgery in the sixteenth century was practised by people of low social standing It was physicians only who were regarded as belonging to the learned class with corresponding social status

An Act of 1540 laid down that Surgeons should no longer be Barbers and that Barbers should restrict their surgery to the care of the teeth The United Company of Barber Surgeons was founded in 1540 by Thomas Vicary who became surgeon to Henry VIII During Shakespeare's lifetime the number of quack surgeons must have been considerable and the above quotation must be read either as a contemporary statement of fact thus or as being a facetious scurrility)

1480 *2nd Citizen* I am indeed sir a surgeon to old shoes—*Julius Caesar* I i

1481 *Lear* Let me have a surgeon
I am cut to the brains—*King Lear* IV vi

1482 *Theseus* They are not dead?
Herald Nor in a state of life had they been taken
When their last hurts were given 'twas possible
They might have been recovered yet they breathe
And have the name of men
Theseus All our surgeons
Convent in their behoof our richest balms
Rather than niggard waste
Bear 'em speedily
From our kind aid —to them inkind —and I minister
What man to man may do —*Two Noble Kinsmen* I iv

1483 *Theseus* With the help of a surgeon he might yet recover —
Midsummer Night's Dream V i

1484 *Escalus* Let us be keen and rather cut a little
Than fall and bruise to death—*Measure for Measure* II i

1485 *Sicinius* He's a disease that must be cut away
Menenius O he's a limb that has but a disease
Mortal to cut it off to cure it easy —*Coriolanus* III, 1

1486 *York* This festered joint cut off the rest rest sound
This lest alone will all the rest confound —*Richard II* v 3

1487 *Falstaff* Can honour set to a leg no or no arm no
or take away the grief of a wound no Honour hath
no skill in surgery then? —*Henry IV* Part I v, 1

1488 *Caesar* But we do lance
Diseases in our bodies —*Antony and Cleopatra* v, 1

1489 *Hector* the rank that scratches
To th bottom of the worst —*Troilus and Cressida* II 2
(Tent used either as a noun or verb, meaning probe.)

1490 *Patroclus* Who keeps the tent now?
Thersites. The surgeon's box or the patient's wound *Troilus and Cressida* v 1

SWEATING

1491 *Antony* In great and sweat under the business —*Julius Caesar* IV 1
1492 *Octavius* ill argument makes us sweat
The proof of it will turn to redder drops —*Julius Caesar* v, 1
1493 *Hamlet* In the rank sweat of an enseamed bed
Stew'd in corruption honeying and making, love
Over the nasty sty —*Hamlet* III 4
(Enseamed is a word derived from Hibernia seam meaning fat or grease. When hawks were kept inactive in cages they became fat This grossness was treated by purgation thus fouling the cages
Hamlet uses the expression to indicate moral pollution of his mother's bed due to her incestuous marriage)

1494 *1st Lord* Sir I would advise you to shun a shun The
violence of action hath made you reek as a sacrifice.
Where air comes out air comes in there's none
abroad so wholesome as that you vent —*Cymbeline*, I 2

1495 *Caesar* knaves that smell of sweat.—*Antony and Cleopatra*, I 4

SWOONING

1496 *King* She swoons to see them bleed.—*Hamlet* v 2
1497 *Bastard* Show me the very wound of this ill news
I am no woman I'll not swoon it it —*King John* v 6
1498 *Celia* I pray you, one of you question yond man
If he for gold will give us any food
I faint almost to death
Rosalind Here's a young maid with travel much oppress'd
And faints for succour —*As You Like It* II 4
1499 *Oliver* Many will swoon when they do look on blood —*As You Like It* IV 3

SYPHILIS The Pox

1500 *Lear* The gallowsers shall devour them flesh and fell —*King Lear*, v 3
(From gouger, to cut away or burrow Hence the colloquial "gougers. Fell is skin as in fell-mongers)

1501 *Timon* This fell whore of thine
Hath in her more destruction than thy sword
For all her cherubim look
Phrynia. Thy lips rot off!
Timon I will not kiss thee then the rot returns
To thine own lips again —*Timon of Athens* IV, 3

(It will be seen from the above and subsequent [illegible] that [illegible] Athens is particularly rich in purely [illegible] of Syphilis. So detailed and accurate are the monuments [illegible] suggests that they had recently read some publication dealing [illegible] Although the description of the pathological changes [illegible] are accurate [illegible] far as they go there are notable omissions [illegible] and no unequivocal mention of gonorrhoea and no mention [illegible] the which were well known to the doctors of the period but [illegible] transition was only described in 1738 by Lancisi Neither does Shakespeare dwell on congenital syphilis although appreciating the occasional [illegible] inheritance. Timon of Athens is not from Shakespeare, being one [illegible] the most corrupt of the texts. It was first published in 1623 The story itself [illegible] old There can be little doubt however that Shakespeare wrote the description of sexual passages. No matter point or back even wrote the unscrupulous parts of the work The quotation above is a little obscure Timon says he will not kiss Phrynia a prostitute, because if he did so the rot she has wished unto his lips will be transmitted back to him Hudson states that there was an old belief that one so transmitting the infection became himself free Timon the self martyr does not wish to free himself of any affliction The possibility of transmission by kissing is obviously recognized Syphilis of the lips of babies caused by feeding from infected nipples was described by Guillemeau in 1527 One of the earliest classical books on Syphilis was written by Ulrich von Hutten in 1519 The author himself suffered from the disease The work was translated into English and might conceivably have been the source from which the poet drew)

1502 *Timon* Give them diseases, leaving with thee their lust
Make use of thy salt hours: season the slaves
For tubs and baths; bring down rose-cheeked youth
To the tub-fast and the diet *Timon of Athens* IV 3

(The contemporary treatments for Syphilis were dieting, sweating, mercury and guaiacum It is surprising how quickly the value of mercury was discovered Fracastoro's famous poem published in 1530 and in which the use of the word Syphilis found its origin mentions the use of mercury and guaiacum as mercurial agents Mercury became so pushed that stomatitis and loss of the teeth was thought to be a manifestation of the disease itself The use of mercury still survives It is an interesting reflection that the pendulum of fame seems to have swung back in that a modern innovation in therapeutic field has been the Hyperthermia treatment strangely reminiscent of the sweat tub)

1503 *Timon.* And thatch your poor thin roofs
With burdens of the dead —*Timon of Athens* II 3

1504 *Timon* Whore still
Paint still a horse may mire upon your lane
A pox of wrinkles! —*Timon of Athens* IV 3

1505 *Timon* Consumptions sow
In hollow bones of men; strike their sharp shins
And mar them spurring Crack the lawyer's voice
That he may never more false title plead
Nor sound his quillets shrilly: hear the flamen
That scolds against the quality of the flesh
And not believes himself: down with the nose
Down with it flat; take the bridge quite in
Of him that his particular to foresee
Smells from the general weal: make the curled-pate
ruffians bald
And let the unscarred braggarts of the war
Derive some pain from you: plague all
That your activity may defeat and quell
The source of all erection —*Timon of Athens* IV 3

(The outstanding clinical description. The pathology intimated to would appear to be a syphilitic osteitis, later with lightning pains and impotency syphilitic laryngitis, later an ulcer with involvement of the recurrent laryngeal nerve destruction of the nasal bones and cartilage syphilitic alopecia, pain during the invasion and development of the disease and finally loss of the power of erection from spinal meningitis syphilis

Strike them sharp shins as I think not a reference to "rabbit shins" but means cause pain in the shins. Taken in conjunction with the next phrase "and mar them spurring" it suggests that the two conditions are allied, in which case the pains of infantile mischief are indicated

Hear the flamen means frost over the priest for which I cannot suggest a specific pathology It is possible that some form of pityriasis psoriasis or psoriasis like syphilide was intended

The reference to the pains of the bregmata is interesting Pain is not a feature of the early stages of syphilis at the present time Yet it is constantly mentioned by the early writers in fact stressed Fracastor in his "De Contagionn" says that the nharantia of the disease changed even in his time and that these pains which originally were severe and prominent became a less prominent part of the clinical picture Thn pains were in the muscles as well as in and around the joints There is then this uncertainty about Shakespeare's use of pain whether he was intending these early pains or those of tabes)

1506 *Iachimo* with diseased ventures
Thn play with all infirmities for gold
Which rottenness can lend nature! such boil'd stuff
As well might poison poison.—*Cymbeline* I 6

(Boil'd stuff of the sweat-tubs.)

1507 *Falstaff* If thn cook help to make thn gluttony you help to make thn diseases Doll we catch of you Doll we catch of you grant that my poor virtue grant that

Hostess What the good year!—*Henry IV* Part 2 II 4

(Good-year is an expletive derived from gourmet noted above Similarly A pox!)

1508 *Falstaff* For can of them she is in hell already and burns poor soul.—*Henry II* Part 2 II 4

(The burning or burning was thn term used for urethral inflammation of which gonorrhœa is the commoo causative It may be that a play on words is thus intended in this quotation)

1509 *King* I last methought
I stood nigh to the smile of heaven who had
Commanded nature that my lady's womb
If it conceived a male child by me should
Do no more offices of life to it than
The grave does to the dead for her male issue
Or died whera they were made or shortly after
This world had air'd them Hence I took a thought.
This was a judgment on me.—*Henry VIII* II 4

(Henry VIII ascn to thn throne at the age of nineteen in 1509 soon fourteen years after thn spread of syphilis in epidemic form throughout Europe as a result of thn siege of Naples Catherine of Aragon who is referred to in thn above was six years older than Henry

The record of Catherine's pregnancies is suggestive of the presence of syphilis in this royal partnership She was the widow of Henry's elder brother Arthur who died shortly after his marriage It is at least possible that Catherine was infected quite apart from Henry VIII

Seven months after her marriage to Henry VIII she had a still-born daughter Eight months later a male child was born which lived three days A still-born son came next seven two years later, followed by another son nine months later born alive but who did not survive. One year and a half later Mary Tudor was born 1516 1558 Other miscarriages followed until at

the age of 42 Catherine reached her menopause. Anne Boleyn having given birth in Queen Elizabeth had two subsequent miscarriages. After the birth of Elizabeth Henry developed an ulcer on the leg which remained for the rest of his life and caused him considerable distress.

It has been said that Bloody Mary showed evidence of congenital syphilis in her portrait a statement with which I cannot fully agree. It is hardly to be expected that Shakespeare would have commented on any such fact had he been aware of it. The reference leaves no doubt however that the poet was well aware of the effect of syphilis on children born and possibly on the viability of such children although making no definite reference to the congenital disease.)

1510 *Boult* But mistress do you know the French knight that cowers i the hams?

Pand Well well as for him he brought his disease hither here he does but repair it. I know he will come in our shadow to scatter his crowns in the sun.—*Pericles* iv. 2

(The bawd is sure that the Frenchman will return to the brothel if only to repair his disease that is cure himself by passing on his disease. *See also* reference 1501. There was a French coin [illegible] an crown of the sun the which the bawd says he will spend in her establishment. There is probable double entendre here in French crown also meaning a forehead invaded by syphilis the corona veneralis. Thus scattering his French crowns means also disseminating his Syphilis and so again repairing his infection.)

1511 *1st Courtezan* A tire-all like him!—*Two Noble Kinsmen* iii. 5

(Possibly a reference to gonorrhoea or the shaving.)

1512 *Bottom* I will discharge it in either your straw-colour beard your orange-tawny beard your purple-in-grain beard or your French crown colour beard your perfect yellow

Quince Some of your French crowns have no hair at all and then you will play bare-faced.—*Midsummer Night's Dream* i. 2

(Quince comments on the association of alopecia with syphilis. It was contemporary custom to dye beards mentioned also in Ben Johnson's 'The Alchemist.')

1513 *Quickly* We must give folks leave to prate what the good jest!—*Merry Wives of Windsor*, i, 4

1514 *1st Gent* And then the velvet that it was a three piled piece I warrant thee I had as lief have a suit of an English kersey as be piled as thou art piled for a French velvet

Lucio I will out of thine own confession learn to begin thine health but whilst I live forget to drink after thee. Behold behold where Madame Mitigation comes!

1st Gent I have purchased as many diseases under her roof as come to——

2nd Gent To three thousand dolours a year

1st Gent Ay and more

Lucio A French crown more

1st Gent Thou art always figuring diseases in me but thou art full of error I am sound

Lucio Nay not as one would say healthy but so sound as things that are hollow thy bones are hollow impiety has made a feast of thee.—*Measure for Measure* i. 2

[illegible] *Reference* [illegible] *Shall* [illegible]

[illegible] the trumpet [illegible] [illegible]
[illegible] the bone-ache [illegible] is the
[illegible] dependent [illegible] for a placket
Troilus [illegible]

[illegible] A man may be hurt [illegible]
Your eyes half out [illegible]
Or if you can't wipe [illegible]
Though not for me, yet [illegible]
But there and then [illegible]
Some two months hence [illegible]
It should be now but [illegible]
Some galliard-goose [illegible]
Till then I'll sweat and [illegible]
And at that time [illegible]
Troilus and Cressida v 10

[illegible] *Cloister* Winchester Goose. *Heaven help* [illegible]
(This expression indicating a person infected with venereal disease arose from the fact that common brothels were situated in Southwark which district was under the ecclesiastical control of the Bishop of Winchester)

[illegible] *Antipholus* Why, but there's many a man hath more hair than wit
Not a man of those but he hath the wit to lose his hair—
Comedy of Errors II, 2
(The context makes it clear that the loss of hair is due to the results of venery)

[illegible] *Dromio* [illegible] light [illegible] effect of fire, and fire will burn
ergo light wenches will burn. Come not near her—
Comedy of Errors IV, 3
(*See* 1508 and 1511)

[illegible] *Antipholus* Where France?
Dromio In her forehead, armed and reverted, making war
against her heir—*Comedy of Errors* III 1

[illegible] *Duke* For thou thyself hast been a libertine
As sensual as the brutish sting itself
And all the embossed sores and headed evils
That thou with license of free foot hast caught
Wouldst thou disgorge into the general world—*As You Like It* II, 7
(Embossed raised like the boss of a shield such a sore as is seen in rupia
Then art a boil a plague sore an embossed carbuncle in *King Lear* II 4)

[illegible] *Clown* As fit as ten groats is for the hand of an attorney
as your French crown for your taffeta punk—
All's Well That Ends Well II 2

[illegible] *Fool* She's even setting on water to scald such chickens
as you are—*Timon of Athens* II 2
(This is a possible reference to the treatment of the sweat tub The Fool was employed by and is referring to a prostitute)

[illegible] *Elbow* [illegible] a bawd, a woman whose house, sir, was as they say
pluck'd down in the suburbs and now she professes
a hot house which I think is a very ill house too—
Measure for Measure, II, 1
(This may refer to the association of brothel and Turkish bath facilities rather than to a sweat tub establishment The meaning is not clear)

1625 *Pompey* —[illegible] one and [illegible] of the thing you would unless they k[illegible]
Measure for Measure II 1

(The early sixteenth century writers insisted on strict dietary measures in syphilis in addition to the sweating and pill in 10 cnts. Fracastor recommends amongst other things abstinence from certain types of fish duck or marsh birds quail pork loin of wild boar cucumber artichokes excessive milk vinegar and wine. Amongst the things recommended to be taken are garden herbs mint, watercress succory cabbage sorrel hops and samphire. In effect a more or less vegetarian semi-starvation diet seems to have been aimed at. Such a diet would not be so difficult or monotonous in Elizabethan times when great attention was paid to the construction of salads, using many herbs whose culinary value is nowadays forgotten or neglected. Such salads were an important item in the menu. Little use was made of the vegetables we now regard as indispensable such as potatoes peas turnips and carrots. The latter, with beetroot, were used for decorative effect rather than as articles of food. The few sprigs of mint and parsley seen to-day in the average garden are very unworthy survivals of the herb garden of the Elizabethan household.

According to Fracastor it was not sufficient to rely on the sweating produced by the inf[illegible] I warn you take no rest or repose.)

Although it is undoubted that syphilis appeared in epidemic form through out the Europe of the late fifteenth century believed to have been caused by the disbanding of the mercenary troops of varied nationalities after the siege of Naples yet there is some doubt whether it did not exist in Europe prior to this period. The doubt arises from the inadequate clinical descriptions which survive. It is accepted that many of the cases of so-called leprosy in the Middle Ages were in fact other pathologies. There are those who state that syphilis was one of these. Creighton for example suggests that the term leprosus was used deliberately to cover up the syphilis of the clergy. The Harleian MSS 2378 quoted by Creighton although containing treatments such as for ye kank on a manys pyntel are not diagnostic of syphilis only of penile lesion.

Tachycardia

1526 *Pandarus* She does so blush and fetches her wind so short
as if she were fray'd with a sprite she fetches
her breath as short as a new ta'en sparrow
Troilus Even such a passion doth embrace my bosom
My heart beats thicker than a feverous pulse—
Troilus and Cressida III, 2

Talking in Sleep

1527 *Iago* There are a kind of men
So loose in soul that in their sleeps will mutter
Of their affairs—*Othello* III 3

Teeth

1528 *Laertes* and tell him to his teeth—*Hamlet* IV 4
1529 *Autolycus* set by pugging tooth on edge—*Winter's Tale* IV 2
1530 *Biron* To show his teeth as white as whales bone—*Love's Labour's Lost* V 2

(This may be a reference to false teeth which were well known in Shakespeare's time
'caused his teeth to be all drawn out and after had a sett of ivory teeth
in agayne' writes Sir John Blagrave in his 'Mathematical Jewel' 1685.)

Robert Herrick on [illegible] Glasco has
Glasses bred [illegible] wife teeth has got
Which though [illegible] neither take nor eat
Six teeth he has [illegible] two are known
Made of a Hart that was [illegible] bone
Which ner for use but [illegible] the sight
He wears all day and [illegible] teeth at night

Jacques Guillemeau 1550 [illegible] pupil [illegible] Pare said they are [illegible] very but by reason of the spittle wherein remeine[illegible] yellow and fulvish [illegible] are not more fitter to make of any [illegible] the same being very hard and thicke and dense or solyde as in the bone of a fishe which in French we call Rovart [illegible] e ivalrus

As late as the early nineteenth century the teeth of corpses were extracted and sold by the resurrection men or body-snatchers. The teeth of soldiers on the battle-fields of the Peninsular War were gathered for the purpose of sale.

Tenting

1531 *Hamlet* I'll tent him to the quick.—*Hamlet*, II 2

1532 *Lear* Blasts and fogs upon thee!
Th'untented woundings of a father's curse
Pierce every sense about thee.—*Lear* I 4

1533 *Imogen* and mine end
Therein false struck can take no greater wound
Nor tent to bottom that.—*Coriolanus* III 4

1534 *Menenius* For his a sore upon us
You cannot tent yourself.—*Coriolanus* III 1

1535 *Hector* but modest doubt is call'd
The beacon of the wise, the tent that searches
To th'bottom of the worst.—*Troilus and Cressida* II 2

(To tent was to probe. Both the expression and the practice has been abandoned by modern surgery. The probe used to be a much used instrument. One of the best illustrated descriptions of the surgical and medical equipment of the period is to be found in Woodall's "The Surgeon's Mate" 1639. Apart from a tendency to ornamentation in the design there is little difference between these instruments and those of the present. One instrument has no modern counterpart—an apparatus for giving fumes as an enema—a doubtful and somewhat dangerous procedure for the bloody flux.)

Thinking

1536 *Romeo* O teach me how I should forget to think.—*Romeo and Juliet* I 1

Throat

153 *Sir Toby* I'll drink to her as long as there is a passage in my throat.—*Twelfth Night* I 3

1538 *Sir Andrew* Taurus! that's sides and heart.
Sir Toby No sir, it is legs and thighs.—*Twelfth Night* I 3

(Both gentlemen are guilty of astrological errors. According to the astrological Sibley who edited and added to Culpepper's Herbal 1805 edition Taurus exerts his celestial influence on the throat. The anatomical areas in the quotation are governed respectively by the Scales, the Lion, the Water carrier and the Archer.)

1539 *Norfolk* Then Bolingbroke, as low as to thy heart
Through the false passage of thy throat thou liest.—
Richard 2nd I 1

(Not a reference to any diverticulum of the larynx but is a Shakespearianism for "lying throat.")

Thumb Biting

1540 *Abraham.* Do you [illegible] thumb at us sir?
Sampson (aside to Gregory) Is the law on our side if I
Gregory (to Sampson) No.
Sampson No Sir I do not bite my thumb at you sir but I do
bite my thumb sir
Gregory Do you quarrel sir *Romeo and Juliet* I 1

(Dekker writing of St Paul's in 1608 says "What swearing is there what shouldering, what justling, what [illegible] byting of thumbs to beget quarrels!")

Toe

1541 *1st Citizen.* I the great toe why the great toe
Menenius For that being one of the lowest basest
poorest
Of this most wise rebellious thing [illegible]
[illegible]

Toilet Paper

1542 *Parolles* Pray you sir deliver me his paper
Clown. Fetch privilee stand away a paper from
Fortune's close stool to give to a noble use!—
All's Well that Ends Well v 2

(A close-stool was a portable commode in one variety of which herbs could be burned to treat the dysenteric anus.

"Also one especiall reason why I have appointed these that a poor weake man in his extremities should not continually goe to the shroude or beake head to ease himself nor be noysome to his fellows but might by the help of his Mate through this meane instrument finde comfort in his most pitifull distresse whose miseries I heartily comme[illegible]
—Woodall 'The Surgeon's Mate' 1639)

Tongue

1543 Iago I had rather have this tongue cut from my mouth —*Othello* II 3

Tongue Tie

1544 *Leontes* Tongue tied our Queen? speak you—*Winter's Tale* I 2
1545 *Plantagenet* Since you are tongue tied and so loth to speak
In dumb significants proclaim your thoughts —
Henry VI Part I II 4

Toothache

1546 *Iago* And being troubled with a raging tooth
I could not sleep—*Othello* III 3
1547 *Benedict* I have the toothache
Don Pedro Draw it
Benedict Hang it
Claudio You must hang it first and draw it afterwards
Don Pedro What! sigh for the toothache?
Leonato Where is but a humour or a worm —*Much Ado About Nothing* III 2
1548 *Don Pedro* She shall be buried with her face upwards
Benedict Yet is this no charm for the toothache —
Much Ado About Nothing III 2

1549 *Laurens* Yet thats was never yet philosopher
That could endure the toothache patiently —
Much Ado About Nothing v 1

(The two contemporary beliefs in quoted bad humours which were supposed to descend from the brain and thereby cause dental caries and the presence of worms in the teeth This last was a long-standing idea as the following extracts show

Suffumigations also are fumigations made of the seeds (i e of hyoscyamus) scattered on burning charcoal these must be followed by rinsings of the mouth with hot water in this sometimes as it were small worms are expelled Sir Bonnus Largus who is believed to have visited Britain in A D 43 if a worm eat the tooth take acorn meal and henbane seed and wax of all equally much mingle these together work into a wax candle and burn it, let it reek into the mouth put a blank cloth under then will the worms fall out

—The Leech Book of Bald 10th Century

If to your teeth you pap to be tormented
By meao some filthy worms therein do breed
Which pane (if heed be taen) may be prevented
By keeping cleane your teeth whoso you feed
Burn Frankincense (it gets not evil scented)
Put henbane unto this and Onyon seeds
And with a linnod to the tooth that's hollow
Convey the smoke thereof and easn shall follow

—Sir Kenelm Digby's 17th century translation of the Regimen Sanitatis Salernitanum

I am indebted for these three references to L Lindsay's Short History of Dentistry

The cures for the toothache were numerous including the use of charms. He wears Paracelsian characters for the toothache and a Filth hallowed wax is his ant dote for all evils says Joseph Hall in 1608 in his "Characters of Vertues and Vices"

One interesting treatment which uses the principle of counter-irritation is detailed in Gerard's Herbal

Many do use to tie a little of the herbe Pellitory stamped with salt unto any of the fingers against the pain of the teeth which medicine seldome faileth for it causeth greater pane in the finger than was in the tooth by the meanes whereof the greater pann taketh away the lesser

1600 1st *Jailer* Indeed sir he that sleeps feels not the
tooth-ache —*Cymbeline* v 4

(*To be continued*)

Clinical Notes and Cases

A NOTE ON DENTAL FLUOROSIS AT TRISTAN DA CUNHA

BY

Surgeon Commander (D) E W KING-TURNER, R N

It is considered that a mild food borne dental fluorosis exists in the inhabitants of Tristan da Cunha Strong evidence of this is offered by Sognnaes in his "Oral Health Survey of Tristan da Cunha" and supported by later if less thorough investigations

The source of this fluorine is thought to be fish which forms a large part of the islanders diet (their drinking water having a very low fluorine content) but fish actually caught off the island have not previously been analysed for fluorine

Since his visit to Tristan in 1955 (1956 *Brit dent J* **101** 262) the writer has attempted to obtain specimens of fish from that locality with a view to determination of their fluorine content Three specimens of flesh from fish commonly eaten by the islanders were received recently These samples contained no bones and were preserved in a solution of 10 per cent formaldehyde The quantities were small and both flesh and preservative were taken for analysis in each case A blank determination of the fluorine content of the preservative alone was carried out on a separate sample and allowance has been made for this (0 04 part per million F) in the following table

Species of fish	*Weight of flesh (grammes)*	*Fluoride as F parts per million*
Five Fingers (*Acanthelabrus unnodactylus*)	44	0 45
Bluefish (*Seriolella antarctica*)	51 5	0 25
Crawfish	66	3 60

(Results are given in the nearest 0 05 part per million F)

The absence of bones from the samples was unfortunate because it is known that the islanders usually cook their food with the bones in a factor which may affect the quantity of fluorine ingested Attempts to obtain specimens complete with bones have failed so far and the investigation must be considered incomplete but the results given above would appear of sufficient interest to be put on record

The limited results obtained in this note were achieved only by the co operation of a number of persons and the writer records his sincere thanks to

Dr K J D Fawcett lately medical officer on the [illegible] who obtained the specimens the Government Chemist Dudley House Im Bell Street WC2 whose department carried out the analysis reported above Lieutenant A B Crawford *MBE*, South African Naval Reserve for a number of private communications regarding the cooking methods of the islanders and to the Director of Dental Studies and Research R N Medical School, Alverstoke for his advice and encouragement

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A CASE OF PATENT DUCTUS ARTERIOSUS

BY

Surgeon Lieutenant L. D. SHARPE, R.N.V.R.

A young 7 year-old girl came up to the out patients department of the Asian Hospital Singapore Naval Base 23 6 56, with a history of fever and cough for the last two days

Examination showed a child smaller than the average for her age She was obviously ill and breathing was distressed She looked blue round the lips and the alae nasae were working There were scattered rales all over the left lung plus bronchial breathing At the right base there were showers of crepitations

The temperature was 99 2° F Pulse 120/min

Cardiac examination revealed a typical ductus arteriosus thrill and the continuous machinery murmur maximal at left of the sternum in the 2nd interspace

A diagnosis of patent ductus arteriosus and bronchopneumonia was made and the patient admitted and treated with crystalline penicillin 500 000 units four hourly

Other tests carried out showed a white cell count of 18 400—mainly polymorphs and the following chest X-ray

The left costophrenic angle is occluded indicating old pleurisy The cardiac ratio is 10 19—cardiac enlargement present

The patient rapidly responded to penicillin and daily dosage was instituted on the second day She became much less dyspnoeic although the cyanotic tinge of her lips remained

After five days the penicillin was stopped and later she was screened There was a visible prominent left pulmonary artery and normal cardiac contours

From the above findings the diagnosis of patent ductus arteriosus was confirmed and the patient referred to the surgeons at Singapore General Hospital

On 31 7.56 she was operated upon and the ductus 1½ mm in diameter identified and freed from overlying glands It was very friable and actually tore away from the aorta The surgeon clamped the aorta to stop bleeding and sutured the open end After releasing the clamp he dealt with the pulmonary end of the ductus arteriosus The chest was then closed and she made an uneventful recovery

Since operation she has been more lively playful and energetic She has lost her cyanotic tinge

Discussion

No one knows why the ductus arteriosus sometimes persists after birth Children with the condition are usually stunted in growth and retarded in development Dyspnœa on exertion is common

The patient with a patent ductus arteriosus is open to danger throughout her life Simple infection brings with it the dangers of a fatal bacterial endocarditis and if she survives this, she lives a progressively invalid life till heart failure causes death in the late thirties or forties

Since the advent of antibiotics subacute bacterial endocarditis has lost some of its dangerous properties though it is still a disease to be frightened of

Operation is difficult but usually straightforward

This case is interesting as it shows three of the typical points about this condition

(1) The basic distress stunted growth, and retardation which is dramatically cured by operation

(2) The ease with which simple infections can cause severe symptoms and become potentially fatal

It is interesting here to remember the chest X-ray report indicating past pleurisy There is a record of bronchopneumonia in 1951 but no mention of patent ductus arteriosus at this date The child was very lucky to survive this infection

(3) The inherent dangers of operation on the ductus arteriosus

It is satisfying to know that this child can now look forward to a near normal lifespan instead of the prognosis of death by the age of 40

A CASE OF PELLAGRA

BY

Surgeon Lieutenant W. L. CORDEAUX, R.N.V.R.

On 25.10.56 a patient wandered into the out-patient department of the Asian Hospital Singapore Naval Base in the middle of about seventy patients that were to be seen that morning He had rather a vacant expression on his face and had to be called for twice before he came in

He complained of a skin rash that he had on both forearms on the back of his hands on the back of his neck and on one or two places on his legs There was slight oedema of both ankles and hands The rash was hard encrusted and hypertrophic a little darker than his normal skin On further examination angular stomatitis was present and the tongue, apart from the presence of the usual betel nut stains was smooth and red

[illegible] examination [illegible] and [illegible] normal. Blood pressure 110/70. No [illegible] the [illegible] palpable [illegible]

The [illegible] was diagnosed [illegible] present [illegible] the patient [illegible] pellagra [illegible] The only [illegible] data about the case [illegible] absence of diarrhoea. Treatment [illegible] high protein diet and 100 mg [illegible] by mouth [illegible] a day [illegible] milk and iron and B complex tablets [illegible]

Progress.—The first two [illegible] the patient tried hard to leave the hospital and had to be forcibly restrained [illegible] his work and sedated heavily. However on the seventh day of treatment he apologized for behaving so badly during the early part of his stay, admitting that [illegible] had not been himself. His rash started to peel off and did not return. After two weeks [illegible] back to normal health mentally and physically and had gained 7 lb in weight.

Investigations.—Hb 63 per cent. BSR [illegible] Liver function tests and plasma proteins normal. Chest X-ray—N.A.D. Stools—[illegible] *lumbricoides* isolated. Kahn and PPR negative. MSU revealed [illegible] and light growth of coliform organisms. Perhaps a contaminated specimen.

P.H.—After admittance the patient's previous notes were found and it appeared he had been admitted to the Asian Hospital in October 1955 with congestive heart failure. Cure was effected with Mersalyl, digoxin and aneurin and thiamine were also given. One of the possible causes listed was beri beri but no peripheral neuropathy was discovered. Chest X-ray showed— Basal congestion and large cardiac shadow.

S.H.—It was difficult to discover this man's present diet because it varied every time he was asked.

Breakfast—A cup of coffee.

Lunch—Rice at a general mess. Occasionally vegetables. (By all accounts he goes to a very cheap mess.)

Supper—Coffee or tea. Occasionally a little rice.

Summary

A case of pellagra is described, as far as is known, the first for about a year in the Asian Hospital.

MEDICAL SCHOOL NEWS

Surgeon Lieutenant C O Le C Hughes started a course in clinical pathology in October 1956 No relief was appointed for him

Instructor Lieutenant B O C Greaves retired in September 1956 and joined the R.N Scientific Service He was relieved by Instructor Lieutenant K Swift, B Sc

The School was visited during 1956 by—

The 29th Senior Officers Technical Course on 10th January

Sir Charles Lovatt Evans and Dr H Cullumbine from C R E L Porton on 9th April

The Deputy Medical Director-General Surgeon Rear Admiral R L G Proctor *Q.H.P.* on 1st June.

The Director-General Armed Forces Medical Services India—Lieutenant General B Chaudhuri on 22nd October

The Medical Director-General Surgeon Vice Admiral R C May *C.B O.B.E M.C., Q.H.S.*, on 31st October

The Medical Director-General Royal Netherlands Navy Surgeon Rear Admiral W A Borgeld on 13th November

The Flag Officer Submarines Rear Admiral W J W Woods *D.S.O.* on 12th December

Surgeon Captain T L Cleave gave a lecture on 20th March on The Neglect of Natural Principles in Current Medical Practice The lecture was published in the Spring 1956 issue of the Journal

Surgeon Captain J G Holmes *O.B.E.* R.N.(Rtd) has lectured on Civil Defence to each of the medical officers Radiological Warfare Courses

Surgeon Commander W J L Crosfill Medical Secretary R.N.P.R.C. has lectured on Survival at Sea to each of the courses in Underwater Warfare and Survival

Surgeon Commander P W Edmondson attended Army exercises in York in April 1956 and gave a lecture on Diagnosis and Treatment of Radiation Casualties.

The Royal Naval exhibit at the Annual Meeting of the B.M.A. at Brighton in July was arranged by the Superintendent of the R.N.P.L. (Dr H J Taylor) and his staff which included Surgeon Commanders S Miles and W L Crocker The subject of the exhibit was "The History and Problems of Submarine Escape

Surgeon Commander W E Crocker attended in H.M.S *Reclaim* the record dive to 600 ft by Senior Commissioned Bosun A M Wookey in October 1956 the tables and details for which had been worked out in R N P I

Courses in the Medical Aspects of Atomic Warfare and Underwater Wat fare and Survival at Sea have been held regularly

A meeting of the Dental Officers, Portsmouth area, was held in R.N Medical School on September 20th when Surgeon Commander (D) D L Goodridge H.D D, L.D S lectured on "Post-operative Care and Control of Œdema in Oral Surgery and Surgeon Commander (D) D W King Turner L.D S showed a film on "Tristan da Cunha," with commentary, and spoke on the recent research into the increase of Dental Caries amongst the islanders

The Director of Dental Studies attended the Dental Symposium held by the Royal Army Dental Corps at the Royal Army Medical College Millbank on 29th and 30th September A varied and interesting programme included talks by eminent Medical and Dental Civilian Lecturers and Dental Specialists of the three Services The Royal Army Dental Corps is to be congratulated on the organization and high standard of this Symposium

The instruction of newly entered medical officers in the treatment of Dental Emergencies continues and lectures films and demonstrations are given to each class of Dental Surgery Attendants

The tests and trials of apparatus instruments and materials in regard to their suitability for the Service continue and there is excellent co-operation with Manufacturers The help afforded by the R N Physiological Laboratory both in the construction of new apparatus and by the Photographic Section is invaluable

We have been pleased to hear that Surgeon Commander C G Hunter *D S C*, R.N (Rtd) who was on the staff of the Medical School from June 1951 to November, 1955 has now been appointed Professor and Head of the Depart ment of Physiological Hygiene in the School of Hygiene University of Toronto and offer him our heartiest congratulations

Way Ahead

In accordance with the Government economic policy the Board of Admiralty has decided to move the Medical School to a part of the Zymotics section of R N Hospital Haslar It has been approved to keep the Medical School as a separate entity with its own entrance and with the same functions The move may take place in 1958 if the plans and alterations can be completed in time. All those who have visited Monckton House will regret that the R N Medical Service is losing this imposing residence and must abandon the plans to amalgamate with the R.N Physiological Laboratory but it is hoped that the new establishment will prove satisfactory

Reviews

M[illegible] S[illegible] Sir C[illegible] W[illegible] [illegible] London: Baillière, Tindall & [illegible]

[illegible] fulfils its [illegible] purpose [illegible] general pra[illegible] expert [illegible] and var[illegible] the practitioner [illegible] [illegible] keep up [illegible] his own [illegible]

The C[illegible] United Kingdom and the[illegible] [illegible] widely kn[illegible] in the chapters [illegible] [illegible] is not without [illegible] [illegible] surgical wit[illegible] [illegible]

Treatm[illegible] hands [illegible] homes and those who have experience [illegible] are brilliant and offer [illegible] and with one exception [illegible]

The volume at 25 shill[illegible] as a selective therapeutic [illegible]

ARMY MEDICAL SERVICES. V[illegible] I—CAMPAIGNS. [illegible] F.R.S. Pp. xlii + 637, with 91 illustrations [illegible] First Edition. 1[illegible] London: Her Majesty's Stationery Office. [illegible]

This first operational volume [illegible] Army Medical Services from 1939-42 and sets out the [illegible] the partial[illegible] period of the Second World War [illegible] against a back-ground of defeat, withdrawal and [illegible] wealth of detail has been available from [illegible] the credit of the Medical Officer of [illegible] administrative training, that official records [illegible] the campaigns in France and Belgium, N[illegible] their orderly withdrawal and [illegible] combatants as well as by the c[illegible]

The [illegible] of constant and [illegible] esteem in which all members of the Royal Army Medical Corps [illegible] total medical officers who had [illegible] during the war, 437 officers and [illegible] interest that 7 9 were lost at sea.

In the sections dealing with the [illegible] made to the provision of medical [illegible]

H

[illegible] suffer [illegible]

Thus [illegible] difficulties [illegible] illustrated [illegible] of the [illegible] Campaign. [illegible] with the cost of the campaign [illegible] was exceedingly high. [illegible] the incompetence of [illegible]

Those of us who [illegible] and this excellent work [illegible] Professor [illegible] disappointed us.

A Textbook of Psychiatry. By Sir David Henderson and [illegible] R. D. Gillespie [illegible] the assistance of Ivor R. C. Batchelor. [illegible] London: Oxford University Press. [illegible]

Henderson and Gillespie [illegible] general physicians [illegible] biological approach [illegible] categories, although [illegible] the diagnosis becomes [illegible] apparent in the text.

In this edition Dr. Ivor Batchelor has collaborated [illegible] Sir David Henderson. Outstanding changes are made in the section on [illegible] particularly with regard to heredity [illegible] Bowlby's work on maternal deprivation. [illegible] Psychosomatic [illegible] and very competently.

The chapter on Epilepsy [illegible] has been re-written and is a valuable and up-to-date account.

Probably the most controversial topic will prove to be the authors' dealing with paranoia and the paranoid states as a single [illegible]. The current view of most authorities is that paranoia [illegible] illnesses should be apportioned between the psychoses [illegible] (paranoid reactions). The statement "The term paranoid [illegible] discarded" is palpably untrue because the expression [illegible] throughout the country. Without entering into the polemics [illegible] there are some notable omissions in the text [illegible] mistaken in taking so dogmatic a standpoint [illegible]. These [illegible] serve well to illustrate the [illegible] differ so much in their criteria for the diagnosis of schizophrenia.

The inclusion of 91 case histories [illegible]. They do not greatly illuminate the [illegible] of the [illegible] opinion [illegible] the [illegible] suicidal attempts [illegible] which Dr. Batchelor has [illegible] book are barely [illegible] mentioned.

The first edition appeared in 192[illegible] there is still a [illegible] of antiquity in the text. [illegible] It is very [illegible]. There is no reference to the treatment [illegible] schizophrenia [illegible] described [illegible] tranquillizing [illegible] in this country and the U.S.A. [illegible] the mental hospital [illegible]

...ampton [illegible] The Relieving Officer (p. [illegible]) [illegible] 1948. By the National Health [illegible] made applicable to all p[illegible] [illegible] [illegible] only or with their friends [illegible] abolished by the N.H.S. Act [illegible] handicapped [illegible] what email children [illegible] Education Act [illegible] the Acts of 1944 and 1948 [illegible] Act [illegible] 1944 not 1941 (p. [illegible]) [illegible] but no reference is made to the p[illegible] of the so-called glycopenic [illegible]

These criticisms are [illegible] high merits and all-round excellence [illegible] book.

THE HUMAN BODY. By C. H. B[illegible], M.A., M.D. [illegible] and N. B. Taylor, V.D., M.D., F.R.S.C. [illegible] M.R.C.S.Eng., F.R.C.P. [illegible] and 8 plates. London: Chapman and Hall [illegible]

The authors of this [illegible] the medical student. [illegible] those who train for the [illegible] physiotherapists, radiographers [illegible] working knowledge of the human body [illegible] useful refresher. What [illegible]

It is quite amazing [illegible] in a volume of such reasonable size. [illegible] in presentation. The wording is [illegible] Much reliance is rightly placed [illegible] Frequent headings, subheadings and [illegible] section of the book much easier [illegible]

No attempt is made to produce chapters [illegible] happens in textbooks, but their length is [illegible] even though this means in the case of the R[illegible] pages. As this is the general policy of the book [illegible] Kidneys and the Skin share a sixteen-page chapter.

The authors cannot, of course, [illegible] and physiology in this class, and it must [illegible] to their many subjects, but it would [illegible] prejudice the book as a whole. There is [illegible] must stress the subjects which have [illegible] in the sixty-three-page section on the Special Senses [illegible] problems of Vision.

The sequence in which the subjects are presented [illegible] is followed by the Skeleton and the Muscular System [illegible] anatomical and functional aspects. The [illegible] problems are later [illegible] the text [illegible] Reproduction.

Finally, there is [illegible] measures and equivalents [illegible] standards. A most [illegible] the subjects in the text and the index [illegible] book of this size.

It is really difficult to find fault with the p[illegible]

plates [illegible] throughout [illegible] Spectral [illegible] the value of this [illegible] become [illegible]

[illegible] purpose [illegible] with the [illegible]

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A Selection of Recreational Activities for Use in the Rehabilitation of Lower Limb Injuries. By Verda Barclay, F[illegible] Chartered Society of Physiotherapists, Superintendent of Rehabilitation [illegible] Rehabilitation Centre, Wolverhampton. 1st Edition. 1956. Pp. 154 with [illegible] and diagrams. London: [illegible] Bell and Sons Ltd. Price 18s. 6d.

[illegible] practical book for those [illegible] injured. It deals with the [illegible] games, cycling, swimming [illegible] treatment of Leg Injuries. Miss Barclay, who has more than [illegible] experience in Rehabilitation, states [illegible] she describes [illegible] remedial exercises [illegible] exercises. There is no [illegible] and often tedious work [illegible] rewarded by periods [illegible] carried out by [illegible] Miss Barclay [illegible] in every sense [illegible] Rehabilitation [illegible] Rehabilitation [illegible] reason that [illegible]

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This is a stimulating and [illegible] as a handbook for Physiotherapists [illegible] work it is first class.

First Aid to the Injured and Sick. By [illegible] and J. Humphrey Evans, M.B., B.S. [illegible] Edition. 1957. Edinburgh and London: E. & S. Livingstone Ltd. Price 7s. 6d.

The issue of a 46th edition of this [illegible] 300,000 copies is [illegible] testimony to its value. Measuring only [illegible] can be carried in the [illegible] waistcoat pocket and contains [illegible] all aspects of first aid

[illegible]

[illegible]

[illegible]

Dermatology for the RAF. By Wing Commander [illegible], M.D., F.R.C.P. [illegible]. Pp. [illegible] + viii. London: Cassell & Co. Ltd. [illegible]

Perhaps [illegible] Dermatology in the Air [illegible] hilarious [illegible] Dr. Sparrow prompts, [illegible] The [illegible] specialist [illegible] and perhaps [illegible] himself [illegible] in this field. [illegible] be a little [illegible] readers.

The first [illegible] of [illegible] 39. The [illegible] chapters deal [illegible] plus a good [illegible] pattern [illegible] great ingenuity [illegible] gives [illegible]

One [illegible] which [illegible] familiar [illegible] to be complete [illegible] human [illegible] of life [illegible] produced. [illegible] hours [illegible] can only [illegible]

The book [illegible] Cecil Beyer [illegible] genera[illegible]

An Introduction to Dermatology. By C. H. [illegible], M.D., [illegible] of Dermatology [illegible] and 286 illustrations. [illegible] Ltd. Price [illegible]

In every [illegible] the [illegible] the [illegible] the medical student [illegible]

The layout [illegible] zeproductions [illegible] local treatment [illegible]

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Does [illegible] but is there [illegible] areas. Finally [illegible] edition.

Whether [illegible] recommended [illegible] about basic dermatology [illegible] graduate course [illegible]

We acknowledge with thanks receipt of the following publications:

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BOOKS RECEIVED

HUMAN DISEASE. By A E Clarke-Kennedy F R C P Pp 767 Illus Edition 1957 Harmondsworth Penguin Books Ltd Price 3s 6d

ALFRED HOSPITAL—CLINICAL REPORTS Volume 6 1956

News of the Service

BIRTH

LAWRANCE-OWEN.—On 7th February 195[illegible] [illegible] (née Wallis) wife of [illegible] J. R. [illegible] Royal Navy [illegible]

OBITUARY

Surgeon Captain C. D. BATEMAN, O.B.E., R.N. (Retd.) died on the 13th January 1957 age 80. Born on the 1st December 1876 he qualified L.R.C.P., L.R.C.S.Ed. in 1901 and entered the R.N. Medical Service as a Surgeon in November 190[illegible]. Promoted Surgeon Lieutenant Commander in 1910 and Surgeon Commander in 1917 he was placed on the Retired List in December 1926 with the rank of Surgeon Captain.

During World War I Surgeon Captain Bateman served in H.M. Ship *Caroline* and at R.N. Air Station Verdoure. From 1st October 1918 to March 1921 he was attached to the R.A.F.

Surgeon Captain F. L. H. MacDOWEL, R.N. (Retd.) died on the 16th January 1957 age 66. Born on the 12th June 1891 he qualified L.R.C.P.&S. in Dublin in 1917 and entered the R.N. Medical Service as a Surgeon Lieutenant in November 1917. Promoted Surgeon Lieutenant Commander in 1923, Surgeon Commander in 1929 and Surgeon Captain in 1942 he was placed on the Retired List in September 1948.

During World War I Surgeon Captain MacDowel served in H.M. Ship *Gardenia* and in R.N. Hospital Plymouth and during World War II in H.M. Ships *Peregrine, Goshawk, Kestrel, Daedalus* and *Merlin*.

Surgeon Captain T. C. PATTERSON, R.N. (Retd.) died on the 8th December 1956 age 75. Born on the 25th December 1881 he qualified M.B., B.Ch. in 1906 in New Zealand and obtained the D.P.H. and D.T.M.&H. in March 1919. He entered the R.N. Medical Service as a Surgeon in November 1907. Promoted Surgeon Lieutenant Commander in 1915 and Surgeon Commander in 1921 he was placed on the Retired List in December 1931 with the rank of Surgeon Captain.

During World War I Surgeon Captain Patterson served in H.M. Ships *Naiad, Fraud* and *Bonaventure* and at Dover Air Station.

He was re-employed as a Surgeon Commander in September 1938 and served in the Medical Department, Admiralty until May 1943, then in R.N. Hospital Haslar until July 1946 when he was released Class "A".

Surgeon Captain F. C. ROBINSON, R.N. (Retd.) died on the 30th December 1956 age 78. Born on the 11th May 1878 he qualified M.R.C.S., L.R.C.P. in Guy's in 1903 and entered the R.N. Medical Service as a Surgeon in May 1903. Promoted Surgeon Lieutenant-Commander in 1911 and Surgeon Commander in 1917 he was placed on the Retired List in May 1928 with the rank of Surgeon Captain.

During World War I he served in H.M. Ships *Charybdis, Havelock* and *Forward*.

Surgeon Captain Robinson was re-employed as a Surgeon Commander in September 1939 and served in Ardrossan Naval Base until April 1941, then in H.M. Ship *Fortitude* as a Surgeon Captain. From November 1943 he served as Medical Transport Officer Aberdeen until released Class "A" in January 1946.

Surgeon Commander J J BENSON, [illegible] R.C.P. & S. [illegible] entered the R.N Medical Service in November 1928. He [illegible] Lieutenant Commander in 1934 and Surgeon Commander in 1940.

During World War II he served in H.M. Ships *Colossus*, [illegible] *Duke of York* and *Cormorant* and in R.N. Barracks Devonport.

His last appointment before the onset of his fatal illness was as Senior Medical Officer on the Staff of Flag Officer Commanding, Reserve Fleet in H.M. Ship *Cleopatra*.

HONOURS AND AWARDS

Knights of the Order of St John of Jerusalem

Surgeon Vice Admiral Sir K. V. Ingleby Mackenzie, *K.B.E., C.B.*

Commanders of the Order of St John of Jerusalem

Surgeon Vice Admiral R. C. May, *C.B., O.B.E., M.C.*, Q.H.S.

HIGHER DEGREES

Fellow by Special Diploma—Surgeon Commander (D)—T. J. Hall.

PROMOTIONS

To Surgeon Lieutenant Commander—L. J. Exford (14.1.57), J. M. Houghton (30.12.56), P. W. Head (30.12.56).

To Surgeon Lieutenant Commander (D)—P. R. Rogers (16.12.56).

TRANSFERS TO PERMANENT LIST

Surgeon Lieutenants J. Cox, H. G. Knox, T. P. Oliver.

Surgeon Lieutenant (D)—F. R. B. Mathias, C. C. Taylor.

ENTRIES FOR SHORT SERVICE COMMISSION

J. W. Alderson, M.B., B.S., M. J. Atwill, M.B., B.S., A. E. Bennett, M.B., B.S., M.R.C.S., L.R.C.P., J. A. Binnie, M.B., Ch.B., J. P. R. Campbell, M.F., P.S., B. J. E. Cooke, M.B., B.S., M.R.C.S., L.R.C.P., H. R. Dobson, M.B., Ch.B., D. W. D. Evans, M.B., B.Ch., D. I. D. Hoare, M.B., Ch.B., F. M. Hull, M.B., B.S., H. R. T. A. McLeod, M.B., B.S., M.R.C.S., L.R.C.P., T. I. Phillips, M.B., B.S., M.R.C.P., L.R.C.P., R. Rudrud, M.B., B.S., M.R.C.S., L.R.C.P., R. B. De Serpa, M.B., B.S., M.R.C.S., L.R.C.P., A. K. Davies, L.D.S., A. Everett, L.D.S., P. Gaunt, L.D.S., G. C. J. Long, B.D.S., D. G. Phillips, B.D.S., E. R. Rigby, B.D.S., W. G. S. Ross, L.D.S., G. D. Sharpe, L.D.S., I. Smith, B.D.S., L.D.S.

TRANSFERS TO SHORT SERVICE COMMISSION

Temporary Acting Surgeon Lieutenants C. N. Barnes, C. McLeod.

RETIREMENTS

Surgeon Captain (D)—D. L. Simpson.

Surgeon Commanders T. S. Osborne, C. A. Miller.

Surgeon Lieutenant (D)—R. M. Muldleton.

APPOINTMENTS IN THE NAVAL RECRUITING SERVICE

(Final Medical Examinations, Officers)

Liverpool area—Surgeon Commander G A Miller R N (Rtd) 1st May 1957 vice Surgeon Captain G G Vickery *O B E*

Glasgow area—Surgeon Commander S Jenkinson R N (Rtd) 1st June 1957 vice Surgeon Captain A W Cunn *M I O*

WARDMASTER OFFICERS

RETIREMENT

Warmaster Lieutenant L W Rickard

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

PROMOTIONS

To Superintending Sister—Miss C I J C[illegible]ke Miss J Donlin

TRANSFERS TO PERMANENT LIST

Senior Nursing Sisters—V Davison J Hargreth H M Scott

Nursing Sister D J Longhaan

ADMIRALTY FLEET ORDERS—1957

(This page is perforated for filing)

24.—Medical—Admission of Acute Mental Cases to Civil Hospitals in Scotland

25.—Medical—Air Transport of Sick Personnel

48.—Forms—M.235, M.235a, M.235b and M.235c—Abolition M.232—Quarterly Return of Dental Treatment—Introduction M.240—Monthly Return of Dental Appliance Work—Revision.

75.—Medals, Decorations, Honours—New Year Honours List, 1957

86.—Dental—Routine Dental Examinations—Cancellation of Suspension

87.—Medical—Morphia—Use in Ships Not Carrying a Medical Officer

133.—Medical—Anti-Tuberculosis Inoculations—Identification of Control Subjects and Follow-up Procedure.

134.—Medical—Examination on Discharge

139.—Surgeons and Agents.

185.—Medical—Officers—Admission to Civil Hospitals Registered under the National Health Scheme

196.—Training—First Aid Training for Naval Personnel

249.—Courses—Officers—Medical Officers—Courses in Medical Aspects of Underwater Warfare and Survival at Sea in 1957

358.—Naval Stores—Dental Stores—Saw Spiral, Fine for cutting Acrylic—Introduction and Allowances

467.—Medical—Prevention of Tetanus in the Service.

505.—Workpeople—Medical—Civilian M.T. Drivers—Eyesight Tests

506.—Workpeople—Medical—Locomotive Drivers—Eyesight Tests.

669.—Dental—Urgent Dental Treatment on Leave in United Kingdom—Method of Obtaining.

669.—Medical—Paint Spraying—Precautions.

717.—Medical—Surgical Appliances Supplied to Admiralty Civilian Employees and Their Families Abroad—Amount of Charges to be Raised

744.—Hospitals—Civil Hospitals and Sanatoria—Military Administrative Officers

757.—Surgeons and Agents.

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VOLUME XLIII SUMMER 1[illegible] No.

Journal
of the
Royal Naval Medical Service

Articles

EPIDIDYMITIS

BY

J. G. SANDREY

Consultant in Urology to the Royal Navy

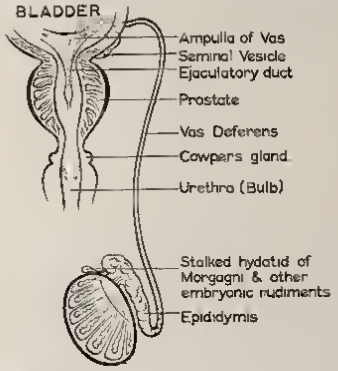
INFLAMMATORY lesions of the epididymis invariably start in the globus minor and are usually due to invasion by bacteria which have descended along the lumen of the vas deferens from a higher level. Before the introduction of modern chemotherapy the commonest infecting organism was by far the gonococcus but now the colon bacillus has become the most frequent invader with the tubercle bacillus second in order of frequency. So-called aseptic (or 'abacterial') epididymitis has been given recognition as a clinical entity in recent years although its pathogenesis is still imperfectly understood.

The *incidence* once highest among young men because of the inefficient methods formerly employed in the treatment of gonorrhoea can now be said to be more or less evenly distributed throughout adult life, non-specific and tuberculous infections predominating before middle age and those arising as a complication of urinary obstructions thereafter. The imperfectly developed genital organs of children are relatively immune from inflammation and any acute painful intrascrotal swelling before puberty is more likely to be due to torsion of the testicle than to epididymitis, nevertheless the latter condition mostly the non-specific form, is sometimes seen in pediatric clinics and Meredith Campbell (1951) has reported a case in a 10 days old infant. The clinical course in children is similar to that of adults but suppuration appears to be commoner, perhaps because many of the cases are associated with systemic infection.

Owing to the number of guises the various forms of inflammation in this part of the body can assume and the readiness with which they can be confused with other intrascrotal conditions it is not surprising to find that mistakes in diagnosis are exceedingly common. A brief consideration of the

tructure of th complicated spermati mechanis may help explain the lo of inflammatory proces here and will also emphasize certain anatomical facts on which differential diagnos tests largely depend

ANATOMICAL FEATURES



The epididymis is a greatly coiled duct with thousands of convolutions lying in the tail of the testis which when straightened out measures about 6 metres. It is about 0·4 mm in diameter and is lined by pseudostratified columnar ciliated epithelium. Its function is to conduct spermatozoa from the testis to the vas and this is brought about by contracture of the smooth muscle of its walls and by the sterocilia. According to Herbut (1952) the tortuosity of the duct produces a valve like arrangement. The epididymis contains aggregations of sperms in its convolutions which are ready to be carried quickly to the seminal vesicle whenever it is emptied by the relatively wide bore muscular vas deferens. It thus acts as a storehouse for spermatozoa. There is a loose connective tissue supporting stroma which is well vascularized and it is obvious that post inflammatory fibrosis here however mild it is can readily lead to stenosis of the duct of the epididymis and cause sterility.

The seminal tract consisting of the ejaculatory ducts the seminal vesicles

the vas deferentia and the epididymes is developed from the Wolffian ducts and like the ureters which are derived from the same source is subject to wide anatomical variations congenital absence, duplication or ectopia of part or whole of the complex duct system are thus fairly often met with. The commonest anomalies of the epididymis itself are those of position (anteversion superior or inferior inversion loop inversion) failure of union of testis to vas congenital absence of part or whole of the epididymis or the vas—and these must all be borne in mind when an examination of the scrotal contents is carried out. Certain *vestigial structures* are to be found at the upper pole of the testis these are the appendix testis (hydatid of Morgagni) the appendix epididymis (stalked hydatid) the paradidymis (organ of Giraldes) and the duct of Aberrantes and are embryonic rudiments of the Wolffian and Müllerian ducts. Many case reports of torsion of these structures are to be found in the literature the condition occurs usually in children or young adults and is often confused with epididymitis. An elementary knowledge of the anatomy of the male external genitalia should, however prevent any such error except in rare cases of inversion.

From the foregoing it is evident that the formation of the seminal tract is such that infection once well established is difficult or even impossible to eradicate entirely by any means short of total extirpation. Organisms may lurk in the sacculated seminal vesicle on the one hand or the convoluted epididymis on the other and one structure may readily infect the other by way of the relatively wide lumen of the vas. Inflammatory œdema will tend to block the minute openings of the ejaculatory ducts and thus prevent drainage, possibly even causing systemic infection in some cases. The tendency for infections to involve the whole seminal tract together with the closely related posterior urethra the prostate gland and the testes makes it impossible to consider epididymitis without taking into account all the other structures. Emphasis must be laid on the importance of rectal examination in any case of epididymitis, the omission of which may lead to gross errors in diagnosis.

These anatomical facts explain the extreme chronicity of most genital infections. They tend to remain dormant for very long periods to be reactivated at any time by sexual excesses alcohol local trauma or constitutional causes. The latter factor seems to be very important for it would appear that certain individuals have a very low resistance to the bacteria which normally inhabit their own bowels and are particularly prone to coli infections of the genital tract whenever their general state of health is impaired in any way.

Routes of Infection

Three possibilities need to be considered—the lymphatics the blood stream the lumen of the vas.

The first can be rejected on anatomical grounds as the lymphatics from the epididymis drain into the pre-aortic lymph nodes and those from the seminal

[illegible]

[illegible]

[illegible]

[illegible] fact [illegible] Fisher and Darling [illegible] (1939) [illegible] able [illegible] examples [illegible] the [illegible] inflammatory disease [illegible] particularly [illegible] fistulas. [illegible] groups [illegible] opening [illegible] urethra are [illegible] from due to [illegible] changes [illegible] particularly those [illegible] method [illegible] operative trauma. [illegible] of the [illegible] well make the tendency [illegible] urethra. In a case [illegible] Monks (1941) [illegible] recurrent epididymitis [illegible] project a fine jet of urine [illegible] several feet like [illegible] In the opening of the [illegible] whenever he voided. Similar cases of urinary fistula of the vas [illegible] described by Hanley (1945), White and Berry (1956) and by Ainsworth-Davis [illegible].

The question whether reflux of urine can occur when the anatomy of the duct is entirely *normal* is one which still remains unsolved although there is much clinical evidence to favour the view that it does occasionally take place under certain circumstances, e.g. by sudden increase of intra-abdominal pressure when the bladder is full. Experimental work in dogs has shown that sterile urine injected along the vas in small quantity will give rise to an acute inflammatory reaction in the epididymis similar in every respect to a mild epididymitis. In the human this experiment has been confirmed by injecting a few drops of the patient's urine (when sterile) down the vas when vasotomy is done after prostatectomy. A tender swelling of the globus minor of the epididymis will invariably appear in a few days later. Anyone who has served as a medical officer in the armed forces during the war will remember the epidemics of "aseptic" epididymitis in young recruits, particularly in sedentary workers who were undergoing courses of physical training. The attacks were often attributed by the patients to a sudden strain when the bladder was full. There was never any evidence of urinary infection, urethritis or seminal vesiculitis, and the attacks were invariably mild in character resembling closely the condition produced in the epididymis by the injection of sterile urine along the vas. Although aseptic epididymitis is less common in civilian practice it is nevertheless thought that the phenomenon of urethro-deferential reflux often plays an important part in the transference of infection from the posterior urethra or the seminal vesicle to the epididymis. Furthermore, the medicolegal position in compensation or disability claims where epididymitis has followed an alleged "strain" is always controversial, although it may have to be conceded that this mechanism is at least a contributory factor in cases where there is a convincing history, e.g. local pain with signs of inflammation following a sudden effort.

Clinical Features

Cases [illegible] gonorrhœal classified according to the bacteriology being divided into two main groups specific and non-specific The former are subdivided into syphilitic tuberculous and fungal infections the latter into bacterial and non bacterial (abacterial) varieties

Syphilitic epididymitis has become exceedingly rare in recent years but an occasional case may still crop up quite unexpectedly when testicles removed for suspected tumour are sectioned Both diffuse or nodular types may occur the entire epididymis is usually involved and the testis itself rarely escapes In the later stages the lesions tend rapidly to break down to form gummatous ulcers and fungus testis The condition usually gives rise to a moderate effusion into the tunica vaginalis and is often bilateral It should always be suspected when after tapping a hydrocele the epididymis is found to be thickened or nodular Positive serology clinical signs of former syphilitic infection and a favourable response to iodides will provide supporting evidence of an underlying specific cause

Tuberculous epididymitis occurs in 2–5 per cent of all cases of tuberculosis All the experimental pathological and clinical evidence supports the view that the urogenital lesion always starts in the kidney with secondary involvement of the bladder and the seminal tract The tubercle bacillus gains access to the prostatic and ejaculatory ducts from the posterior urethra and epididymitis, commencing always at the globus minor follows transference of the organism via the lumen of the vas the latter structure rarely being itself involved in the process Although the tubercle bacillus has had to travel a very long way from the primary lesion in the lung to the epididymis it is a striking clinical fact that a scrotal swelling is sometimes the first manifestation of a tuberculous infection Ross (1953) in an analysis of 469 males with urogenital tuberculosis (B A U S collected statistics) found that over 50 per cent had clinical evidence of genital involvement and over 40 per cent of these had spread to the epididymis C I Murphie in a personal communication stated that 35 per cent of servicemen with urogenital tuberculosis first reported because of a scrotal swelling

The typical tuberculous lesion of the epididymis is craggy and at first involves the globus minor spreading later to the body and globus major and finally the testis itself Where there is evidence of urinary tuberculosis the diagnosis presents no great difficulties In about 25 per cent cases however the onset is acute with rapid breaking down of the lesion to form typical tuberculous abscesses and sinus formation Tubercle bacilli will generally be found in the discharge though repeated search may be necessary to detect the organism

Difficulties in diagnosis may arise with the more insidious chronic forms which closely resemble cases of mild non specific epididymitis Here the help of the laboratory will be needed in detecting the tubercle bacillus in the urine or the semen and tests will often have to be repeated many times before findings are

[redacted] The value of semen analysis in diagnosis [redacted] been stressed [redacted] by Hanley When all other tests fail to [redacted] the removal [redacted] small piece of the epididymis for biopsy may be [redacted] although the histological picture may still be inconclusive when [redacted] fail to reveal AAFB in the tissue

Blastomycosis epididymitis caused by the mould [redacted] *Blastomyces dermatitidis* is really only part of a disseminated infection which arises in the lungs It is rare in this country but a number of cases have been described in the U.S.A. where it is known as Gilchrist's disease [redacted] The clinical [redacted] resemblance to those of tuberculosis were described by Jacobson and Dieckerty (1945)

Non specific epididymitis may be bacterial or abacterial The former is due to infection by the commoner pyogenic bacteria particularly the colon bacillus *Strep pyogenes* and the *Staphylococcus pyogenes* which gain access to the seminal tract from the urethra via the prostate and ejaculatory ducts The colon bacillus is the commonest invader of the urinary tract in both sexes no particular age group is exempt and although some local abnormality may be discovered in some cases by far the commonest predisposing factor is a constitutional one i.e. an impaired state of general health and a lowered resistance to the bacteria which normally inhabit the lower large bowel We all are familiar with the asthenic undernourished individual who seems to be particularly prone to this type of infection

In its most typical form *b. coli epididymitis* is an acute process which rarely suppurates but tends to resolve incompletely and is very prone to exacerbation Mild or exceedingly chronic forms which closely simulate tuberculosis and atypical suppurative lesions may create difficulties in diagnosis

Staphylococcal infections of the seminal tract are usually introduced from without by the passage of instruments along the urethra and the tied in catheter after prostatectomy is a frequent source damage to the ejaculatory ducts at operation facilitating the entrance of bacteria This type of infection often suppurates and breaks down rapidly to form a scrotal abscess It can be prevented almost entirely by prophylactic division of the vas deferentia

Abacterial epididymitis —The term is applied to a miscellaneous group of cases where there is no evidence of bacterial infection The inflammatory process is usually mild and resolution fairly rapid In so called chronic epididymitis a fairly common phenomenon in young men who are courting congestion causes the epididymes to become enlarged and often exquisitely tender The relationship to *trauma* is often very difficult to determine but the term traumatic" epididymitis should be reserved for those cases where there is a definite local injury In considering compensation or pension claims cases will fall under the following categories

(1) The history is vague and the injury slight merely serving to draw the patient's attention to an established lesion of some kind

(2) There is a history of local trauma followed by pain and swelling of the

epididymis and gradual resolution (traumatic epididymitis). Severe injuries of this kind are exceedingly rare. The testicle is well protected by its mobility within its coverings, its position between the thighs, etc., and injuries are rarely serious enough to require medical attention.

(3) Claimants may give a definite history of pain and swelling of the epididymis following a severe effort when the bladder is full (orchitis par effort) and many surgeons are prepared to accept the mechanism of reflux of urine along the vas both in causing abacterial epididymitis and in aggravating an existing infection by causing its transference to the epididymis.

(4) Indirect trauma, as in cases of epididymitis after injection of haemorrhoids, where prostatitis caused by phenol injection has spread to the epididymis.

Diagnosis

Although the testis and other intrascrotal structures are so readily palpable mistakes in diagnosis here are notoriously common and that is why this is a part of the body beloved of examiners. Transillumination, rectal examination and urinalysis are indispensable aids and careful clinical examination of the patient as a whole with special attention to the chest will pay handsome dividends. Occasionally a swelling appearing at the lower pole of the testis is the first manifestation of serious disease and for this reason alone accurate diagnosis at the earliest possible moment is of great importance.

I have recently seen two patients whose initial complaint was a lump at the lower pole of the testis and who were treated for several weeks at home by their local practitioners for non-specific epididymitis, neither responding to rest, local applications and chemotherapy. The first had extensive genital tuberculosis which had arisen secondary to advanced though quite symptomless pulmonary tuberculosis; the second had a small malignant tumour, a chorionepithelioma, at the lower pole of the testis with widespread metastases in the lungs, liver and other viscera. Both these patients were dead within six weeks. A more thorough clinical examination of the patient as a whole at the beginning of the illness would have made the diagnosis clear in both instances.

The differential diagnosis from other intrascrotal swellings—chiefly torsion, mumps orchitis, tumours of testis or epididymis, syphilitic lesions, cysts, etc.—will be based on careful clinical examination and a sound knowledge of the anatomy and pathology of this region. It is said that torsion is so rarely diagnosed because it is never thought of by the general practitioner who so seldom sees a case. Prehn's sign (elevation increases the pain of torsion but relieves that of epididymitis) was described in 1934 but is of doubtful value.

Adenomatoid tumours of the epididymis are slow-growing and clinically benign. Their pathology is controversial but they resemble hamartomas rather than true neoplasms and, according to Rankin (1956), probably arise in remnants of the Wolffian duct.

Orchitis of mumps is said to develop in about 25 per cent of infected adult

males but is rarely seen before puberty The testicular lesion usually commences as the parotitis is subsiding and is characterized by gross œdema of the subcutaneous tissues of the scrotum and exudation into the tunica vaginalis and the testis itself The writer has seen several cases of acute epididymitis associated with enlarged cervical lymphatic glands mistaken for mumps with orchitis Indeed the diagnosis of the latter must always be suspect when nodules or thickening can be felt in the epididymis after the testicular swelling has subsided

A testicular tumour especially when situated posteriorly may be mistaken for a chronic inflammatory lesion of the epididymis and cases of tragic delay in the removal of a highly malignant neoplasm are only too familiar to most of us Look and see is a safe motto in any case of doubt and the writer has never regretted exploring a testicle which he thought might contain a tumour The association of neoplastic with inflammatory process in the testis would appear to be more than a casual one In the past five years the writer has removed four testes with seminomata one of them bilateral in patients who first presented with typical acute inflammatory lesions in the epididymis It seems highly probable in these cases that dormant embryonal rests were provoked to activity by the inflammatory changes in their vicinity

Two cases of *feigned* tuberculous epididymitis are reported by Dakin (1948) in his entertaining book Urological Oddities both of them in young men who had successfully evaded service in the United States armed forces One a Russian emigrant produced a hard nodule at the lower pole of the epididymis by injecting paraffin wax the other an Italian caused multiple sinuses to form by injecting vaseline into the lax subcutaneous tissues of the scrotum

Prevention

In the presence of urethritis prostatitis vesiculitis or urinary infection both urethral instrumentation and prostatic massage are often followed by epididymitis and should be postponed if possible until a full course of chemotherapy has been given Constipation which may cause straining and pressure on the seminal vesicles and prostate by scybala should be corrected sexual excitement avoided and alcohol abstained from The dangers of lifting or straining especially when the bladder is full should be explained to the patient

(A plucky old retired Admiral crippled with arthritis had rigged himself a block and tackle with which he was able to heave himself out of bed When he developed acute cystitis he noticed pain and swelling in one or other testicle whenever he performed this feat bilateral epididymitis persisting until the urinary infection was got under control)

The value of prophylactic ligature of the vas after prostatectomy and in the prevention of spread of tuberculous infections from prostate or vesicle to epididymis has long been appreciated

Treatment

Treatment will be directed partly to any underlying cause in the urinary or seminal tract (it will include the surgical relief of obstructions the treatment

[illegible] for the sinus [illegible] being treated on a [illegible] [illegible] elevation of [illegible] (1944) the admin[illegible] in any genital [illegible]

[illegible] in certain cases [illegible] structure [illegible] [illegible] thus that from [illegible] epididymis [illegible] epididymectomy [illegible] localized diseases [illegible] orchidectomy in [illegible] Diagnostic epididymectomy is some [illegible] current lesions [illegible] is [illegible] Because of the tendency of nearly [illegible] to cause local [illegible] the results [illegible] are often disappointing

[illegible] inflammatory lesions of the epididymis are often [illegible] the disease itself. Sterility from stenosis of the duct [illegible] impotence and genital discomfort [illegible] serious therapeutic problems and are often the [illegible] mental illness. In any genital disorder reassurance and tactful management will often do much to prevent many of these functional sequelae. Testicular [illegible] a condition first described by Sir Astley Cooper in 1830 as the [illegible] testis is apt to occur in hysterical or abnormally anxious subjects [illegible] brought on in the first instance by post-inflammatory fibrosis. It is largely [illegible] in treatment and generally aggravated by any form of surgery [illegible] after orchidectomy as a phantom testis.

Conclusion

As the epididymis of the adult male is a much favoured site for inflammatory processes it is important for serving medical officers to familiarize themselves with that group of disorders which fall under the heading of "epididymitis" as well as with the miscellaneous conditions which frequently affect the male gonads and which are apt to cause confusion in diagnosis.

While the appearance of a nodule in the epididymis will usually signify nothing more than an attack of so-called non-specific epididymitis it must be borne in mind, however, that this sign may sometimes demand more serious consideration.

Psychological sequelae are common and may in the long run become far more important therapeutically than is the primary genital lesion.

Acknowledgement

I am grateful to Miss F. Whitworth, artist to the Institute of Urology, for the diagram.

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NIGERIA

BY

Surgeon Captain D. D STEELE-PERKINS, R.N

[illegible] few occasions for H.M. Ships to visit the coast of Nigeria—it lies [illegible] beaten track and until recently even for ships at anchor in the roads [illegible] an unhealthy station. The chance of visiting this unusual colonial [illegible] ry in the capacity of a Naval Medical Officer is thus remote. The appor[illegible]nity of a three and a half weeks visit to Nigeria in the spring of 1956 seemed [illegible]ficient excuse to note down a few of the more interesting facts for publication [illegible] Journal of the Royal Naval Medical Service.

The country of the Niger is little more than half a century old. Its frontiers though hugely natural were drawn on the map by agreement among the great powers of Europe. Those who lived within them shared no common language, religion or tradition.

Although Nigeria had known European penetration of one sort or another for well over 300 years it never prospered and was mainly exploited by the gun and slavery school, ruffians and adventurers. Living cut off by a hostile environment from the main streams of progress that were carrying Europe and America forward so swiftly the Africans lived for the most part in a state of backwardness such as England has not seen for 1,500 years. Disease sapped their vitality and shortened their lives. Ignorance and superstition were universal, the economy was primitive, the shadow of the witch doctor and the slave raider were over all—for though the shipping of slaves to the West had been stopped among the tribes themselves slavery persisted.

There was no white settler class, the climate and the mosquito saw to that. Subsequently as malaria came under control Europeans commenced to come in increasing numbers to administer or exploit but not to stay. There is still no white settler class: there are only 11,000 white amongst 32,000,000 Nigerians today. Lord Lugard, the founder of modern Nigeria, set down 50 years ago for all time that the land was the property of the people and no European may buy, sell or speculate with it.

Physical features.—Nigeria falls naturally into four main geographical zones each stretching across the country from east to west.

The coastal strip 10–60 miles wide is mainly mangrove swamp and is intersected by a network of creeks and rivers, especially in the deltas of the Niger and Cross rivers. Inland is a well watered zone of dense tropical forest rich in oil palm and to the west cocoa. Beyond that is a belt of park like land with

savannahs of high grass sparsely inhabited because of the tsetse fly. Finally comes a great rolling plateau some 2 000 ft above sea-level from which occasional granite and sandstone hills rise to 5 000 ft. To the east the plateau itself rises to 6 000 ft. Its northern half is free of tsetse and carries many cattle tended by nomadic pastoral tribes. The Cameroons are almost wholly mountainous; the Cameroon mountain itself (13 350 ft.) is a volcano rising directly from the sea.

Climate.—In general wetter near the coast and drier inland, the rainfall ranging from 40–70 inches. Average temperature 80 with maximum of 110.

The people.—Population is about 32 000 000. It is estimated that there are 240 tribes, mostly with their own language or dialect. The largest are the Hausa and Fulani of the northern regions.—Moslems. The Ibo in the eastern region number 5 000,000 and there is about the same number of Yoruba in the western region. The great majority of Nigerians are peasant farmers or in the northern regions nomadic cattle owners.

Religion.—Two thirds of the 17 million people of the north are Moslems and so are roughly one-third of the westerners and a half of the present inhabitants of Lagos. The Islamic religion has gained many adherents since the British occupation partly because it permits polygamy. Christian missions have been at work for a hundred years or more. Calabar, the scene of Mary Slessor's devoted labours, was one of the earliest stations. Their work has been subject to limitations in the Moslem emirates of the north, but Roman Catholics and Anglicans (the Church of Scotland) have made substantial progress in the south.

Many of the existing schools and hospitals are run by voluntary Christian effort and there is more than one African bishop. The religion of those who are neither Christian nor Moslem is animistic. They recognize the existence of a Supreme Being and numerous minor deities held to be spirits. As most of these spirits are malevolent they must be pacified and there is much exploitation of the ignorant by "juju" priests.

There is much that one would like to record of this vast country—such as the fascinating story of *columbite* found when mining tin at Jos which was thrown out and used as ballast and subsequently bought at £2 a pound. Or the wonderful sculptures in bronze, brass, ivory and wood from Benin or Ibadan.

The medical problems.—This vast region is afflicted with the majority of tropical diseases as well as many of those of more temperate climates.

In the foregoing outline of the general characteristics of the population and climates of Nigeria nothing of any moment has been said about disease. However sufficient has been said to indicate the enormous problems presented in trying to raise the standard of health and economy—the two inseparable factors. To attempt to cover the medical problems of the separate territories of this vast country would entail far more than is intended in this article. Northern Nigeria presents a cross section of all the medical problems presented in the whole country except for those peculiar to the coast. The Medical Director of the Northern Region, Dr. David Mackenzie, has

[illegible] problems and [illegible] recently [illegible] With [illegible] tempted [illegible] *dical sin*- [illegible] of the [illegible] problems [illegible] rapidly [illegible] will be to [illegible] fully the same [illegible] those [illegible] British influen[illegible] guidance [illegible] incredibly rapid and the results [illegible] the other hand the level[illegible]ments in [illegible] less startling advance and [illegible] the methods of disease control in [illegible] uniformly low economic standards [illegible] can only be applied widely to [illegible]

[illegible] Britain public health was an [illegible] standard of living and their con[illegible] rapidly expanding economy of a state [illegible] industry. The inherent and grave [illegible] subsistence and over the years [illegible] health was a capital asset. The [illegible] comprehensive systems of sanitation [illegible] to a great extent abolished or mitigated [illegible]. The Health Service is now [illegible] part of a high level of physical [illegible] the life span and the reinforcement [illegible] falling birth rate

[illegible] tendency likewise to regard health [illegible] of low economic status as "social [illegible] drag on production of a low standard [illegible] lethargy and lack of initiative does [illegible] means. The first point is that one of [illegible] the tendency to overlook the fact that [illegible]. With all this investment the common [illegible] be lifting on the initiative and production [illegible] which will eventually give the health service the full [illegible] social service.

[illegible] health problems revolves round the mundane fact of the [illegible] and pure available. Perhaps some contrasts will illustrate [illegible] expenditure per head of population for all health services in the [illegible] is approximately £10 per head. In Northern Nigeria the [illegible] total [illegible] recurrent expenditure during 1956/7 is 18 shillings per head. In the United Kingdom the average N.H.S. prescription alone costs [illegible] of General Practitioners to the population in

[illegible] and Wale[illegible] in Northern Nigeria [illegible] [illegible] is approximately [illegible] The [illegible] [illegible] [illegible] [illegible] per annum which is [illegible] [illegible] Nigeria at the present time.

The fundamental problem [illegible] health cover for [illegible] than Great Britain and N[illegible] family income [illegible] between £35 and £50 per [illegible] crops produced by the [illegible]

The lines of approach [illegible] diseases of environment [illegible] and environment [illegible] The human trypanosome [illegible] medium is the special [illegible] curative hospital and [illegible] tion and the essential [illegible] munity still rests on [illegible] the immediate skill [illegible] extremely [illegible]

Possibly [illegible] lines a lack of flexibility [illegible] those observed in [illegible] considerably from that upon [illegible] For example, the optimal height [illegible] child as indicated by climate chart [illegible] very considerably from that of the European [illegible] fering with the full development [illegible]

Of the many urgent problems [illegible] endemic diseases as public [illegible] standing example [illegible] per cent of endemics during [illegible] some 30 per cent in adult life. Of those [illegible] show symptoms of the acute disease [illegible] impact of other intercurrent infections [illegible] example, the communist disability [illegible] passed as fit for combatant [illegible] jungle warfare proved to be fifty [illegible] the field of operations.

Is bilharziasis a public health problem [illegible] balance with the parasite. If the parasite [illegible] protection of the water supplies against snail [illegible]

peri[illegible]ly. Many [illegible] and that until environmental conditions are such as to abolish [illegible] other problems must receive priority

This question is for a great measure common to the majority of parasitic diseases—malaria, the intestinal worm infestations, certain forms of filariasis. Should one as an interim measure do more than treat the exacerbations of the disease as manifested by acute clinical crises, giving only such treatment as will not upset the tolerance achieved in the host-parasite relationship?

While solutions to these questions are being sought one can concentrate on the extended use of the now commonplace antibiotics, chemotherapeutic and other agents that modern medical science has given us. Penicillin for the treponemal oses, sulphones for the leprosy patients, insecticides for the control of the sumulium fly or the mosquito, possibly isoniazid for the ambulant treatment of tuberculosis. One can vaccinate against smallpox, inoculate against yellow fever, powder with insecticides for relapsing fever or kill the flea vector of plague.

All these can be done in the mass at relatively small cost and in this way modern medicine has indeed changed the picture in Africa. It is essential, however, to view the dramatics of mass medicine against the fundamentals of population pressure and food supplies and the fact that nature abhors a vacuum—even though it be created by the abolition of disease. Thus poliomyelitis is a disease of rising standards of hygiene, the psychiatric clinic a manifestation of a physically healthy but disturbed community.

The Northern Region of Nigeria occupies the greater part of Nigeria and contains more than half the population. In the northern part is a Moslem civilization of some antiquity with a fascinating history. This Moslem community presents its own health problems. The Will of Allah and the inevitable rightness of the scourges of the flesh make for example for a low vaccination state and the acceptance of cerebrospinal meningitis. The purdah system places the reservoirs of leprosy of tuberculosis and of the specific diseases in an inaccessibility that is difficult to overcome.

In the Central Plateau live the pagans now moving down from their retreats in the hills and coming into contact with the diseases of civilization. Here leprosy tends to be an epidemic disease in fertile soil and tuberculosis a new and devastating experience.

The Riverain Provinces, known as the Middle Belt by virtue of their longer contact with European civilization are ahead in education and impatient of the traditions of an older and highly organized civilization. Here is the most clamant demand for modern curative medicine despite a still active belief in juju. Here yaws, sleeping sickness and leprosy abound.

The Region is predominantly an agricultural one and grows its own subsistence crops. Apart from the mining of tin and columbite in the plateau areas there is little mineral wealth and light industry is only now becoming established. There are local handicrafts but they make only a minimal contribution to the country's economy. Therefore the impact of modern trade with its

[illegible] of bicycles sewing machines gramophones enamelware have to be paid for mainly by the production of cash crops such as those of groundnuts cotton hemseed and rice Hence the need for cattle first those diseases that limit agricultural production

Nutrition is on the whole adequate and the food is normally available in quantity of not in balance Cassava yam and sorghums are the common staples wild spinach groundnuts beans green peppers and the indigenous fruits provide the relishes There is generally speaking a serious deficiency of animal protein as cattle and other domestic animals tend to be regarded as the bank rather than the source of foodstuffs In the Riverain areas fish is plentiful and is exported sun dried widely throughout the Region

Frank malnutrition is seen rarely except in the aged the mentally deficient or those with chronic debilitating diseases The most vulnerable section consists of the preschool children and it is here that the protein deficiencies may be most marked at a stage that is fraught with the perils of a developing tolerance to the parasitic diseases

The Nigerians are great traders and the market place is the social centre These markets are in themselves a problem particularly in relation to smallpox cerebrospinal meningitis and tuberculosis

Natural water supplies are inevitably polluted particularly in the villages where shallow and unprotected wells or borrow pits provide the domestic supply The well aerated swirly flowing river may be the source of onchocerciasis the slow flowing well shaded river or stream harbours the tsetse fly the borrow pits breed the mosquito and harbour the snail vector of bilharziasis the shallow unprotected well supports the water flea which may give rise to serious outbreaks of guinea worm

Housing is considered of local materials—earth from the surrounding terrain is used to provide the mud bricks for the traditional dwelling and so the borrow pits are developed Poles from the nearby bush or fibres from the palm trees provide the roof timbers and a thatch of local grass forms the roof The design may vary—in the Moslem north the household is enclosed in high walls and the enclosed courtyard has its many buildings connected by a maze of passages and doors High ceilings and thick walls provide coolness and a pleasant gloom which is a relief from the heat of the day The strict seclusion of purdah however allows no entry of alien males and access can normally only be gained by the Health Staff or her few locally trained assistants These assistants are almost entirely illiterate and taught by practice to perform the essentials such as vaccination elementary first aid simple midwifery and the recognition of leprosy smallpox and cerebrospinal meningitis

To meet the demand of purdah clinics are held at night and the purdah women and their children are attending in increasing numbers to have their ailments treated when opportunity is taken to teach the essentials of infant care and hygiene In certain centres where the female wards of the hospital are behind high walls the more progressive Moslems will now allow their

[illegible] The [illegible]
[illegible] Where [illegible]
with dev[illegible]
[illegible] 1939 [illegible]
such circum[illegible]
centres established [illegible]
then given [illegible]
[illegible] but all [illegible]
full swing [illegible]
tradition [illegible]

[illegible]

Sleeping sick[illegible] to receive special [illegible] cases of sleeping sick[illegible] this problem. During [illegible] 100,000 [illegible] reported today the [illegible] 7,000 [illegible] the average incidence [illegible] still small [illegible] incidence may reach [illegible] 7 per cent. [illegible] fortunately rare.

When the service [illegible] them all. To this end [illegible] points throughout the [illegible] taught to do gland punct[illegible] to give treatment. Sixty [illegible] from these dispensaries [illegible] It was early recognized [illegible] that the control of the tsetse [illegible] progress towards a solution [illegible] it had to be at the expense [illegible] service was developed which [illegible] tsetse fly relate the distribution [illegible] sites. Much experimental work [illegible] methods of destruction of the fly [illegible]

Progress has been slow but [illegible] problem of control is by no means [illegible] By the end of last year 3,000 miles [illegible] the breeding of tsetse reduced to a minimum [illegible] the cost of clearing rises rapidly and the [illegible] which involves living in the bush under the most [illegible] moving constantly as the clearing progresses [illegible]

In the Riverain Provinces the [illegible] make effective clearing an impracticable task [illegible] as well as the

prohibitive cost Therefore another approach is now being made that of prophylaxis using pentamidine This drug is not without risk and whereas it has been used extensively in neighbouring territories it has not been possible to employ it widely in Nigeria without interfering with the rights of the individual Sudden death following an injection will drive a primitive community into the depths of the bush and the last state will be worse than the first.

Recently it has been possible to gain the confidence of the population living in one of the most heavily infected sections on the Benue river and earlier this year over 6,000 persons have been given prophylactic pentamidine without untoward results Certain of the villagers were visited by a white man for the first time and the impact of this terrifying spectacle on certain of the younger age group had to be seen to be believed

A cardinal point of all survey work is that confidence must be established and treatment given for all ailments presenting as far as resources permit It is all futile nonsense to inform a patient that he is an interesting case presenting fascinating and complex pathology He feels ill and wants something done about it and if one does not do something then the next visit is a waste of time however imposing the therapeutic armamentarium now available for his complaint This may seem to be very obvious but it is so obvious that it is all too often overlooked Cure is the prelude to prevention and this cannot be stressed too often under African conditions particularly with penicillin that dries the chronic ulcers and heals the lesions of treponematosis It may breed a not unenvilized liking for injection therapy but at least it makes the patients feel that there is something to be said for the European version of the medicine man and that perhaps he has something equally good for other complaints in that juju bag

The logical development of the Sleeping Sickness Service has therefore been the conversion of the sleeping sickness dispensaries into rural dispensaries for the treatment of all common ailments with a sleeping sickness survey team attached whose function it is to deal specifically with all cases of sleeping sickness presenting or diagnosed during village surveys

It is not known extensively the African lives in balance with the trypanosome There is evidence to suggest that many may do so and deal with the stage of parasitemia successfully without treatment On the other hand once the nervous system becomes involved there is a progressive deterioration going on to coma and death if untreated

Bound up with the human problem of trypanosomiasis is the widely spread disease of the closely allied "Nagana Sickness" of cattle and domestic animals This is spread by the same vector the tsetse fly Infection in cattle produces similar lesions and effects to trypanosomiasis in man No accurate census of the cattle population has ever been taken as cattle count for tax in the hands of the Native Authorities The cattle population in Northern Nigeria is about 8,000,000 head about the same as England and Wales though there is no

comparison in quality. Cattle and domestic animals are only found in the Eastern and Western Districts in the relatively small areas free from the tsetse fly. Of the eight million cattle in the north about 80 per cent are owned by nomadic Fulani who live in the most northern areas where rainfall varies from 20-35 inches. Most of the rain falls during the four months June to September and for the last six months the country is completely dry. These dry northern areas cannot support a large cattle population all the year round. So for centuries the Fulani have moved southwards with their flocks and herds in search of better grazing which can be found adjacent to the large rivers of Benue and Niger. Rainfall here varies from 45-60 inches and is spread over six to eight months of each year. During this southward movement the Fulani cattle owners are accompanied by their wives and families only the oldest and youngest members of their households being left behind in the north. This trek southwards is ideal from a cattle management point of view but has the serious disadvantage of bringing the cattle herds into close contact with the tsetse-infested areas in the Riverain Provinces.

In January 1951 the West African Institute for Trypanosomiasis Research, W.A.I.T.R. was officially opened. The purpose of this institute is to centralize research on both human and cattle trypanosomiasis as well as the tsetse which is the carrier of both these closely related but differing diseases. Previously research was undertaken on a small scale by different technical departments in various parts of West Africa. The headquarters of the institute is in Kaduna but there is an equally large branch in Vom in the Plateau Province and a field station in the forest belt of Benin. The headquarters in Kaduna deals with the entomological and medical research whilst Vom does zoological and veterinary investigations. Both Kaduna and Vom concentrate on the conditions prevailing in the savannah belts of tropical West Africa. The station near Benin undertakes the study in the field of conditions comparable to those found in the dense forest belts of the four West African territories. The Sleeping Sickness Service is separate from W.A.I.T.R. but there is a very close association and co-operation between them. Two interesting and promising lines of research are of interest. The first one attempts to produce a resistant strain of cattle. It was found that the dwarf Gambian cows were completely immune to trypanosomiasis and they could be crossed with the Fulani cattle. The transmitted immunity seems to vary as the degree of dilution of the strain. However further genetic experiments are being made and there are indications that this may eventually produce immune cattle of a suitable economic size. The other interesting development is the production of a new drug so far unnamed which would when used in combination with Antrycide pro-salt developed by I.C.I. in 1949 enable cattle to resist trypanosomiasis attacks for a period of about five and a half months. This discovery would make it safe for cattle to remain longer in areas with good grazing than at present. It is thought that this new drug may prove to be both curative and prophylactic. Antrycide pro-salt alone appears to have a protective effect for about eight

Nigeria

weeks Should this new development fulfil its early promise [illegible] health and well being of the Fulani cattle will in turn [illegible] increased fertility and greater demands for feeding stuffs in the [illegible] north when they return annually from the low country grazing [illegible] interest to learn that all wild animals are infected with the [illegible] immune to its effects they act as a reservoir of infection

Leprosy —In Northern Nigeria detailed surveys have been [illegible] a period of years and a reasonably accurate estimate of the [illegible] is 3 5 per cent This means that there are some 595 000 lepers in the Region of whom 500 000 are in need of treatment The balance of 95 000 represents the early mild cases which will resolve spontaneously and the [illegible] and crippled cases who have been disabled in the process of contracting the infection

Of the 500 000 lepers in need of treatment some 15 per cent have the much infective lepromatous or malignant form of leprosy These constitute the infective focus and in certain groups where 12 to 15 per cent of the total population have leprosy up to one fifth may be of the lepromatous type This applies particularly to the pagan tribes referred to earlier and in these tribes the disease may be said to be of almost epidemic proportions

The use of *dapsone* has revolutionized the outlook on leprosy and has brought hope and confidence in these unfortunates A situation such as exists today in Northern Nigeria cannot of course be dealt with by segregation and institutional treatment Quite apart from the social disruption and economic loss entailed if some 3 per cent of the population were to be segregated it is quite impossible physically to do so Therefore ambulant outpatient treatment is the only possible answer leaving the relatively few institutional beds available for treatment of crises and for rehabilitation of cripples

Segregation is however an essential part of the treatment of the malignant and infective forms but it can be provided at low cost and simply by the establishment of segregation villages near outpatient clinics In these villages the leprosy patients build their own huts and live and work within their own community according to their traditional ways of life

Out patient clinics are being established at hospitals at rural dispensaries attached to first aid posts and in fact wherever *dapsone* can be given weekly or twice weekly under supervision A system has been adopted whereby the patient is given a dose of *dapsone* and sent away to make supervision Supervision is given by the doctor and the locally trained dispensary attendants have the responsibility for carrying out these treatment centres which are visited regularly by officers of the leprosy service both lay and professional

During the past three years some 75 000 lepers have been given treatment at 352 centres Last year close on 3 000 patients were discharged as requiring no further active treatment Some authorities maintain that *dapsone* must be given to a leprosy patient for the rest of his life if relapses are to be avoided Sufficient time has not yet passed to prove or disprove this Meantime patients are being

cured of their signs and symptoms and it is believed that the great majority will not relapse.

With the aid of UNICEF who supply the *dapsone* free and provide certain vehicles and equipment the attack against leprosy in the mass is being developed rapidly at small cost. 1960 will be the year of the peak of the effort and from 1965 onwards the number of patients discharged will begin to drop. Thereafter it may be possible to say that eradication is in sight.

Malaria.—Malaria is probably the disease of greatest economic importance and in a continent where there are no natural barriers to prevent reinvasion the most difficult to control effectively at a cost the community can afford. Certain island territories have been freed of malaria in recent years, notably Cyprus, Mauritius and Sardinia. British Guiana has also been cleared largely because the vector mosquito is particularly susceptible to D.D.T. and because there is a natural inland barrier which makes re-invasion improbable. In the islands all measures can be employed—residual insecticides, larvicides and the administration of anti-malarial drugs to the population. The campaign is relatively short-lived and once completed a small but vigilant permanent staff is all that is required to prevent reinvasion. In a continent the size of Africa however an area may be cleared of mosquitoes and its inhabitants cleared of parasites but there remains always the permanent risk of re-invasion of a community that has lost its immunity. In such circumstances the results can be devastating if re-invasion does take place as a result of a breach in the wide peripheral defence that must be maintained permanently.

If malaria is to be conquered in rural Africa however a beginning must be made and it is believed that the use of residual insecticides will provide the means of control at a reasonable cost. Sponsored by the Federal Malaria Service of Nigeria and supported by UNICEF which provides insecticide equipment and vehicles and by the WHO which has provided certain of the staff a pilot control scheme has been started in Western Sokoto.

The area chosen is 600 square miles in extent and contains a population of 125 000. The terrain is of the savannah type crossed by broad river beds which in the wet season give rise to a belt of marsh land some 4·5 miles wide along this section of the river. Under such conditions control by larviciding or drainage is at present impossible.

Malaria is holo-endemic and by the end of the first year of life virtually 100 per cent of the children have been infected. By three months of age the parasite rate varies between 30 per cent and 50 per cent. *Anopheles gambiae* and *funestus* are the only two vectors and the A.A.D. (adult anopheles density) during August and September averages 800 with a sporozoite (infective) rate between 3 and 4 per cent.

Starting in 1954 after full malariometric data had been recorded the control area was divided into three sections which are being sprayed twice yearly with residual insecticides Dieldrin, B.H.C. and D.D.T. are being applied using one insecticide in each of the three sections. Every habitation and structure—be it

fowl house or market stall—is sprayed a total of 80 000 places to be treated each six months.

This has resulted in a reduction of the A.A.D. by 95 per cent., but unfortunately there has not yet been a corresponding drop in the parasite rate in infants under one year. This has been reduced in 20 per cent., but this is by no means approaching eradication as obviously transmission is still going on. Meantime the mosquitoes have acquired a very high degree of resistance to dieldrin, a degree of resistance to B.H.C. and there is an indication of cross resistance to these two insecticides. This sudden and high acquisition of resistance is a very disturbing phenomenon and the most urgent attention is being given by continued research services to this problem.

Provisional plans have already been made in conjunction with UNICEF and WHO to expand the pilot project into a permanent control scheme covering the whole of Sokoto province containing just under one million people. Once cleared of malaria it is planned to maintain a peripheral protective barrier by the use of residual insecticides and ringing the changes as circumstances dictate. Will this now be practicable? The answer is not known and much will depend on the results of the work of the next nine months.

In Western Sokoto the first reaction to this operation has been of great interest. The insects have disappeared—flies, bed bugs, cockroaches and the nuisance mosquitoes. Those vicious biters that sing at night. The village is quiet, the children sleep well—they all sleep well. Has lack of proper rest at night been the cause of the lethargy and lack of initiative so characteristic in these malaria ridden communities? It cannot be the whole picture and it is a point of interest rather than of importance.

Yaws.—Hyperendemic yaws is one of the major problems in the Riverain Provinces of Nigeria. An incidence of over 6 per cent. of florid yaws at all ages in the community is regarded as being hyperendemic and the highest rate of florid yaws recorded in certain sections of the area is 20 per cent. Anything over 6 per cent. means that almost every member of the community is either infected or a contact and the Control campaign at present going on is conducted on this assumption.

As far as possible every member of the community is given an injection of penicillin and the average dose, taking all age groups into consideration, is approximately 0·9 of a mega unit. Only one injection of penicillin is given and it has been gratifying to see the results of this mass campaign. During the year 1955 some 350 000 persons were treated over an area of 700 square miles by six teams consisting mainly of African auxiliaries under the supervision of a Medical Field Unit Superintendent. Populations were reached by boat on foot through bush tracks, through swamp areas and by bicycles. During the rains the team members even had to carry their bicycles and in this fashion often covered quite long distances on foot. On the whole there was a very high degree of co-operation and it was found that the census figures were in almost all cases exceeded by the number of persons treated.

The [illegible] this mass treatment campaign is [illegible] yaws in the hyper-[illegible] [illegible] and the work is being done in [illegible] with the Medical [illegible] Eastern and Western Regions [illegible] where borders are [illegible] tribes homogenous Therefore [illegible] yaws which become [illegible] smaller as one goes north will receive similar treatment In the first stage of the campaign which will end in March 1958 it is aimed to abolish yaws in a population of 1 3 million persons Once the initial stage has been completed teams of yaw scouts will carry out house to house visitation spotting new cases These cases and the immediate contacts will immediately be given another injection of penicillin During the third stage control will be effected from permanent Medical Institutions Government Native Authority and Voluntary Agencies by which name the Missions are described

The popularity of this injection treatment which produces such amazing results to the sufferer in such a short time has established a contact and confidence that it is believed will form the basis for a Rural Health Service that will attack the other common endemic diseases notably leprosy

This yaws campaign has again been given great practical support by WHO and UNICEF WHO has supplied the advisory staff and UNICEF has made its contribution by providing vehicles equipment and penicillin

Onchocerciasis —A disease of great interest and emerging economic importance is onchocerciasis Transmitted by the buffalo gnat *simulium damnosum* this filarial infection is distributed around the rivers flowing over the hard rock plateau of the Northern Region A strip of country 7½ miles wide on either side of the rivers including stretches of the great Benue and Niger rivers is the habitat of the fly which breeds in the well aerated and fast flowing sections of the watercourses The infection undergoes a long incubation period of some 12 to 18 months during which time the adult worms develop in aggregations giving rise to well defined nodules most usually encountered around the buttocks and waist lines Releasing showers of filaria the female worm keeps up the disease process over long periods of time and to see the active filaria in a skin snip makes one realize why the intense irritation that is so characteristic is so distressing, giving rise to general malaise insomnia, and progressive skin changes The literally raging tide of filaria eventually attacks the eyes causing insidious changes which may go on to total blindness There is also evidence to suggest that the disease results in infertility and in highly endemic areas a slow depopulation is always a feature

Degrees of incidence range from 25 per cent of the total population up to 80 per cent in areas of the highest endemicity In the population affected the blindness rate again covers a range of 0 2 per cent to 12 per cent which latter figure is the highest recorded The youngest case of blindness due to onchocerciasis so far recorded occurred in a boy of 15 years of age but generally speaking the incidence of blindness is at its maximum in the older age groups

That this is a disease of great economic importance is now fully recognized Quite apart from the loss of productive energy inherent in the disease process

... to certain ... £10 per head as an ... million per ... can be taken as a conservative ...

Despite the ... given rise to the term River Blindness ... and the terms River ... suggested as an alternative.

Fortunately the ... gave some hope of interrupting ... and work in Kenya has demonstrated the efficacy ... streams. Two pilot control schemes ... this year in Northern Nigeria and ... ongoing.

In Antrypol it is believed that ... adult worm and thereafter the ... Brimicle has been used extensively ... the death of the filaria. Unfortunately ... provocative agent which intensifies ... in numbers to appear in the skin nap.

Antrypol is by no means the ... penem agent has been developed ... is. Long experience of ... a fruitful drug to the staff ... in no means held in contempt.

Conclusion

This article only touches on the fringe ... A list of the diseases of major ... with the greatest economic impact. ... mounting the medical problems ... ago the expectation of life of ... such that 40 per cent might not survive ... can of be accepts the lesson of medical ... life both for himself and his family. ... has been shown earlier and beautiful ... these difficulties there is hold long ... ment of the Rural Health Service. ... in Ibadan the capital of the Western Region ... College Hospital. This medical school ... London University will enable Nigerians eventually ... degree in Nigeria. At present the final ... pleted in the United Kingdom. Large areas of the country ...

more than [illegible] Progress in large [illegible] African [illegible] health service. Special training have had to be developed [illegible] human material available and related to the [illegible] pattern [illegible] tion and traditional ways of the community to be served. [illegible] not possible to employ more than a handful of doctors [illegible] many medical technicians. If the service [illegible] comprehensive [illegible] all areas are in touch with some branch of the Royal Health Service [illegible] number of trained African auxiliaries are the first essential.

In conclusion I [illegible] like [illegible] thank Dr David Mackenzie *O.B.E.* C.M.G. for [illegible] the information [illegible] at my disposal and Surgeon Rear-Admiral Dent [illegible] *C.B. O.B.E.* Q.H.P. for his permission to publish this article.

THE KOWLOON RIOTS, 1956

BY

Acting Surgeon Commander B. VICTOR JONES, R.N.

1st October is the anniversary of the establishment of the People's Republic of China. It is commemorated annually as the principal Chinese Communist festival and although Hong Kong is a British Crown Colony it tolerates the celebration of this occasion. On 1st October 1956 Hong Kong and the principal mainland town of Kowloon were decorated by a brilliant display of flags and placards. The Red Flag and the Union Jack were frequently to be seen flying side by side.

10th October—the Double Tenth—is the Chinese Nationalist's principal festival and as usual the Nationalists did their best to outshine the Communists in this matter of decorations.

The occurrence of these two important festivals within a few days of each other naturally produced some interfriction tension in the Colony and an incident in the Li Cheng Uk resettlement estate in Kowloon sparked off the most serious riot the Colony has experienced for many years.

The resettlement estates consist of huge blocks of flats. They house refugees from China most of whom prior to resettlement lived as squatters in ramshackle huts on the hill-sides or in shacks erected on roof tops or on the pavements of the Kowloon streets. They are predominantly Nationalist in political persuasion.

On 10th October the inhabitants of one of the blocks in the Li Cheng Uk estate stuck some flags on to the wall of the building. This was contrary to regulations for while there was no objection to displaying flags on poles or strings they were difficult to remove if stuck to the wall. A zealous Chinese official of the Resettlement Department knowing that his superior would be visiting the estate that morning removed as many of them as he could.

This act was not appreciated by the inhabitants of the block who collected at the Resettlement Office and demanded compensation to replace the flags which had been removed and torn in the process. They later demanded that firecrackers be discharged by the resettlement staff a traditional Chinese form of apology. Some firecrackers were in fact obtained but they did not satisfy some of the crowd who demanded that a string of 100,000 crackers should be hung from top to bottom of the building and that portraits of Sun Yat Sen and Chiang Kai Chek should be erected together with a large National ist flag.

[illegible] during the [illegible] [illegible] [illegible]

[illegible] about 40 yards [illegible]

[illegible] Hospital at Kowloon General Hospital [illegible] Hospital [illegible] General Army Hospital [illegible] Hospital [illegible] [illegible] [illegible]

[illegible] Jack I'm all right' might well have [illegible]

The [illegible] habits of many local Chinese were more than apparent [illegible] they threw away their unfinished cigarette ends on to the deck [illegible] indiscriminately. Few showed any inclination to help them [illegible] and most showed little gratitude for their treatment. This [illegible] to Chinese patients encountered in ordinary hospital [illegible] have usually found to be much appreciative of all that was done [illegible] One small boy tirelessly mined the wards all day dishing out and [illegible] urinals but this was clearly not voluntary effort—he had in some way [illegible] by the other patients to do this job.

The patients were guarded by R.A.M.C. soldiers and later by the police; no [illegible] occurred in the wards.

Details of the Casualties

A total of 129 casualties was admitted to the 33rd General Army Hospital [illegible] were due to gunshot wounds and 24 to other causes such as burns [illegible] and tear-gas bombs.

Neither of the sites of penetrating wounds is more than that as one might [illegible] all parts of the body were liable to be hit by the pellets. Most of the [illegible] contained lead pellets. They penetrated soft tissues readily [illegible] and through wounds were common but since the pellets were [illegible] the exit wound was no larger than the entrance wound and tissue [illegible] minimal. When they hit bone they sometimes caused fractures [illegible] of the long bones and skull which then penetrated readily. Owing [illegible] comparatively low velocity they did not cause much damage from [illegible] bony missiles. In only one of the gunshot wounds we treated had [illegible] been carried into the depths of the wound and few of the untreated [illegible] became septic.

There were included 13 penetrating wounds of the abdomen 11 penetrating [illegible] of the chest—of which nine were thoraco-abdominal—7 penetrating [illegible] of the skull and 14 compound fractures and penetrating joint injuries. [illegible] injuries included one case of secondary of the brachial artery and [illegible] of the popliteal vessels. Peripheral nerve injuries included one section [illegible] and radial nerves and one of the radial alone.

There were 4 deaths only two of these followed operations five most of [illegible] brought in moribund and died before surgery could be contemplated. [illegible] found in the fatal cases was—Skull 4 Chest 5 Abdomen 2 [illegible] 1. All but two of the fatal cases died within 24 hours of [illegible]

Nursing

The load on the regular nursing staff was very heavy one. All the "medical" [illegible] by the regular staff of sisters nurses and orderlies the other

[illegible] patients and making [illegible] workers [illegible] Red Cross [illegible] its welfare workers [illegible]

Surgical Treatment

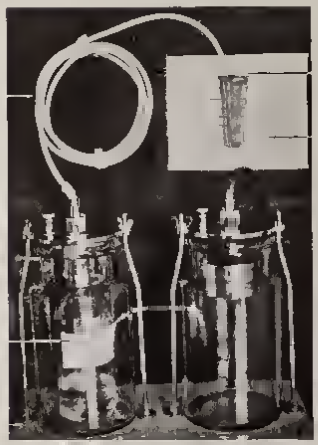
With such a vast influx of casualties surgery [illegible] operation required to save life or limb. [illegible] so many patients [illegible] operations did not come to surgery until as much as forty-eight [illegible] injury. The delay was in large measure due to the difficulty of getting [illegible] hospital from the scene of the riots; many did not report [illegible] hours after wounding when it became obvious that their wounds [illegible] than they had at first hoped. Delay was also due to the large [illegible] which was more than two theatres with limited staffs could [illegible] and [illegible]. The policy therefore was that only wounds of the chest and [illegible] compound fractures and wounds involving joints or major [illegible] were subjected to operation. Bullets in soft tissues were left [illegible] unless they were palpable under the skin when they were removed [illegible] by a junior M.O. under local anaesthesia.

Two Army surgical teams began operating on the [illegible] Thursday 11th and continued throughout that night. On the morning of Friday 12th I and the team of Sick Berth Staff from R.N. Hospital Hong Kong joined in, bringing with us a quantity of sterile towels and gloves. We then took over the load with the help of a surgeon who had had some sleep during the night and continued throughout the day. Col. Grim[illegible] took over the [illegible] at 2200 and we all carried on until 0230 13th when we closed the theatres for the night. We all started again at 0830 13th and by 2000 13th all the primary surgery had been done.

The operative treatment followed the lines usually accepted for war surgery when the wounds are not heavily contaminated and [illegible] the cases in the hospital in which they are first treated. Most of the wounds were closed primarily but a few were left open for delayed primary [illegible] later date. Peacetime pathology was not entirely lacking: one abdomen opened contained a large ovarian cyst which had to be removed before [illegible] examination of the bowel could be done. Another patient had many round worms palpable in the small bowel.

In a patient who had sustained [illegible] of both [illegible] vessels with loss of an inch or two of the artery, an attempt [illegible] continuity by using a piece of the vein as a graft; unfortunately [illegible] anastomosis could not be achieved and it was necessary to proceed to quadruple ligation. Despite this the limb survived.

Most of the serious cases were given [illegible] drips and many required transfusions. Although the transfusion service under [illegible] specialist in pathology gave us remarkably good service, blood was of necessity in short supply and we had to be content with transfusing up to a haemoglobin of 65-70 per cent. In some cases blood was ladled out of the chest or abdomen and [illegible]



[illegible] The policy was to get [illegible] Most minor cases were handed [illegible] for [illegible] eight hours of admission. The [illegible] term cases were kept [illegible] for discharge and these included all the [illegible] abdominal injuries. Long term cases such as compound fractures were transferred to [illegible] in plaster. It has unfortunately not been possible to achieve [illegible] the follow up of these cases.

Lessons Learnt

The only value to report in an incident of this sort is the personal and lessons that can be learnt from it. To many readers who had both experience in the World and Korean wars the scene I have described will not be unfamiliar one presenting few problems. To those of us who had not had previous experience of the major surgery of battle casualties the event was a novel one and made us realize how little one learns about this sort of thing from books—unless one happens to have read them the night before the crisis!

Our experience with these wounds caused by the Greener gun suggests that they can be dealt with more conservatively than those caused by rifle bullets or shell fragments. The wounds are simple and usually uncontaminated and they do not contain foreign bodies other than the pellet. We relearnt the lesson that it is futile to hunt for pellets unless they are lodged in a vital structure such as a joint; they are difficult to find and if deeply seated are unlikely to do harm if left.

However the policy that is usually advocated in the case of long range shotgun wounds of the abdomen—conservative non-operative management—is not applicable in Greener gun wounds. The intestinal perforations are too large to be self healing and at least one case treated conservatively had to be opened up as a peritonitis later. Similarly several of the chest wounds which we hoped would stop bleeding after aspiration failed to do so and required thoracotomy.

We concluded that all abdominal and most chest wounds ought to be explored but that wounds elsewhere could in general be treated very conservatively. Under these circumstances one finds oneself faced with more cases than can possibly be operated on and it is undoubtedly correct to adopt a policy of [illegible] can be possibly afraid doing this one. It must not be forgotten too that the operation is only an incident in the treatment and that good pre- and particularly post-operative treatment under skilled supervision is of great importance.

The Army organization for this emergency based on their wartime Casualty Clearing Station set up worked extremely well. Although at first felt that we should have been called to at the start of the emergency in retrospect it is clear that we should then have fallen into much the same error as the right policy is in work one team for a definite period and then relieve it by a fresh

one so that [illegible] are kept thickly to capacity all the time It is important to [illegible] that one has to change over not only the surgeon but the whole team [illegible] anaesthetists theatre sister and staff laboratory and X-ray staffs and [illegible]

It is important to have plenty of everything under these circumstances—plenty of instruments sterile towels and gloves transfusion sets and drugs Disposable one time only transfusion sets would be excellent for this sort of affair and would save a great deal of man hours

I was introduced to a very simple but effective device for dealing with tension pneumothorax which occurred in several of the chest wounds An ordinary thin rubber finger cot is tied round the butt of a large intramuscular needle and a small hole is cut in its side The needle is plunged into the chest the finger cot provides a very efficient expiratory valve A conventional water seal drain is substituted when the patient is finally settled down in the post operative ward

The importance of a case history card which is attached to the patient on admission and never leaves him until discharge cannot be over-emphasized this is especially so when one is dealing with casualties who do not speak English have names which are difficult to spell phonetically and have many aliases 1 Med 25—Field Medical Card—and its enclosure F Med 26 would have been useful here Notes must be clear but very brief so that the next doctor who sees the case can see at a glance what the injury was what treatment has been carried out and what programme is proposed for future treatment and disposal

Acknowledgment

It would not be right to conclude this account without mentioning the excellent work done by LSBA Macey and SBAs Brock and Grigg They quickly settled down to work in an unfamiliar hospital and provided with their Army colleagues a very efficient theatre service as well as doing many odd jobs in other departments

REFERENCE

(1) Hamilton J E and Duncan E (1944) *Surgery* **13**, 10

100 YEARS AGO*

AN ESSAY ON OPIUM SMOKING

BY

Surgeon CHARLES F. A. COURTNEY, R.N.

Opium has of late years been so extensively introduced into China that [illegible] now consumed by so many millions of that vast empire that who[illegible] to write on subjects connected with the country should scarcely be excused should he omit to touch upon the opium question. There are few more important subjects connected with modern history of the nations that have attracted so much attention as the trade of opium. It was not only the immediate cause of England's first war with China in 1839 but commercially politically and morally it is a question of surpassing interest and importance.

Although the greater part of the opium consumed in China is introduced from abroad the poppy is now cultivated in several parts of the Empire for its narcotic juice. Dr. Maugowan who has thoroughly investigated the history of Chinese opium in a paper read before the China Branch of the Royal Asiatic Society says: "There are many species of the genus Papaver found in China including the *P. orientale* and *P. somniferum* and both varieties of the latter *P. S. album* and *P. S. nigrum*. they are found throughout the hilly districts from Shing king to Kwangsi from the Himalaya to the Pacific. In Chinese papaver is called Ying-Suh—the literal signification is rice poppy this the plant which has proved the bane of the Chinese race bears the name of their staff of life. The synonyms too are all indicative of its edible character—Mi Yu imperial rice Mi-tang rice sack Mi-kuh rice grain and Siang-mi elephant rice in like manner we derive the name from pap infants food."

It appears that as early as A.D. 1068 Su poppy seeds were extolled by the brothers Su for the nutritious gruel they afford. The Pharmacologist Wang writing in the beginning of the Sung dynasty between 960 and 979 says "opium comes from Arabia and is procured by incising the capsules of the red poppy." This is the first notice of opium to be found in Chinese books. The Pun tsan a materia medica published in 1550 treats of opium as a novelty at Pekin where it was used as an aphrodisiac. The earliest dictionaries and encyclopaedias make no mention of the poppy from which it may be inferred that the plant is not indigenous. It appears to have been first cultivated for

* This is the first of a series of extracts from naval medical officers' journals now in the library of the R.N. Medical School. The journals dated from 1856 to 1880 were compiled by medical officers on all parts of the world and it is hoped that short extracts will make interesting reading. —Ed.

[illegible] centuries ago is [illegible] by writers as in [illegible] [illegible] reference in times of scarcity being classed with barley [illegible] other nutritious grains There is no evidence of its cultivation in China [illegible] the sake of the [illegible] juice of its capsule Indeed the commencement of the present century

Opium does not appear to have become an article of commerce of any im[illegible] before the middle of the seventeenth century the date assigned by [illegible] to the commencement of opium smoking The practice however pro[illegible] commenced at a still earlier date for Barbosa writing at the beginning of the sixteenth century uses the word AMFIAM and in his account of Malabar ornaments it among the articles brought by the Moorish and Gentile merchant of western India to exchange for the cargoes of the Chinese junks, and such it is known is in some degree the course of trade even in the present day

The East India Company made its first experiment in the opium trade in the year 1773 and the seductive nature of the practice and the rapid extension of opium smoking may be at once appreciated by a glance at the subjoined table

In 1790	4 054 Chests
1800	4,570
1810	4 968
1820	4 005
1830	16 877
1840	70,619
1850	52 935
1857	60 000

Of the various causes which have led to the habit of opium smoking among the Chinese is their social and luxurious disposition In China every person in easy circumstances has a saloon to his house elegantly fitted up for the reception of his friends with pipes opium tobacco etc All are invited to smoke and in many are thus induced to commence the practice from curiosity or politeness and few are afterwards able to discontinue the practice A belief it is said founded on experience that the practice heightens and prolongs venereal pleasure is another inducement to commence the practice It is however admitted by all that opium smokers become impotent at a much earlier period of life than others the drug apparently having the power of emasculating those addicted to its use In painful and incurable diseases in all kinds of mental and corporeal sufferings in misfortunes and in other reverses of fortune the opium shop is resorted to as an asylum where for a time at least the unfortunate may drown the recollection of his cares and troubles in an indescribably pleasurable feeling of indifference to all around But although these may be reckoned among the chief causes which induce so large a number of people of China to resort to opium smoking we must never forget that opium is a drug of priceless value as a medicine and that when taken in small quantities it allays pain and hunger and tends to soothe the vascular and corporeal

system diffusing in a mysterious manner a transient feeling of health pleasure and vigour through the system. John Hunter one of the most celebrated men of his day was often heard repeating to himself as he passed along the wards of his hospital "Thank God for opium" referring to its extreme value in the treatment of disease. That a medicine of such undoubted ability should be much abused and applied to improper purposes is natural enough considering the frailty of human nature. Opium is a narcotic stimulant and when under the influence of what may be termed a moderate dose a man may for a time gain an accession of nervous energy and be able to perform a greater amount of labour than usual just as a tired horse may go if well whipped the faster for a short time—reaction of course follows and the man's best state becomes worse than his first.

The opium smoking shops are as a general rule somewhat miserable looking places. They are kept open from early in the morning until late at night. The smoking room is furnished with several wooden couches constructed of bamboo and covered with mats. At the head of each is a narrow pillow or bolster for the head to rest upon. In the centre of each shop there is a small lamp which while serving to light the pipes diffuses a needless light through the gloomy abode. The pipe is composed of a shank and a head piece. It is bored through the centre from the mouth piece to the head where there is a cup to collect the opium. The smokers generally go in pairs and recline on the couches with the head resting on the pillow. The mode of proceeding is as follows: first one of the pair takes a small portion of opium on the point of a small metallic rod and lighting it at the lamp applies it to the small aperture (resembling the touch hole of a gun and which is not larger than a pin's head) in the bowl of the pipe. After inhaling a few whiffs he hands the pipe to his friend who lights another piece of opium at the lamp and then they go on alternately smoking till they have had sufficient. The fume is always expelled through the nose and in old smokers even drawn into the lungs before it is expired. This process generally lasts about half an hour. One or two whiffs is the utmost that can be inhaled from a single pipe. During the smoking time they are at first exceedingly loquacious and the conversation highly animated but, as the opium takes effect the conversation drops, they frequently burst out into loud laughter for the most trifling reasons or without any apparent cause at all unless it be from the train of thoughts through their excited imaginations. The next phase presents a vacancy of countenance with a pallor and shrinking of the features so that they resemble people convalescent from fever. A dead silence precedes a deep sleep which continues from half an hour to three or four hours in which state the pulse becomes much slower softer and smaller than before the debauch.

The apparatus for smoking is spread out not unlike a small tea service. A little cup contains the delectable liquor nearly of the consistence and colour of tar. There are also on the table a small glass lamp and a silver capped pipe and a few other articles as brushes needles etc. for cleansing and trimming the

years borne testimony to the [illegible] the Chinese have exercised in indigence in spirituous liquors. The Colonial Surgeon of Hong Kong a few years [illegible] the ravages of consumption among the cribles of mortality [illegible] in Hong Kong from the [illegible] residents than from the [illegible] a matter of great [illegible] nothing to shun than the [illegible] upon the consumption [illegible] certain that the [illegible] then effects upon the [illegible] consequences of the [illegible] of innocent and [illegible] opinion. The medical [illegible] Hong are only the [illegible] but I have reason [illegible] nubium and epilepsis [illegible] of unpunished [illegible] that in modern [illegible] same time fully [illegible]

From an English [illegible] opium trade [illegible] in the [illegible] Mr Thomas D [illegible] which on the [illegible] death his place [illegible] Almost all the [illegible] in Hong Kong [illegible] thought always [illegible] chronic [illegible]

The Chinese [illegible] result from the [illegible] beyond the [illegible] this trade [illegible] local [illegible] Chinese [illegible] prohibition [illegible] its cultivation [illegible] that so long [illegible] country. Impressed [illegible]

[illegible] could imagine that the regulations [illegible] entire exclusion of the article It [illegible] the government or at all events its [illegible] revenues for opium shops have for many [illegible] provinces of China and more especially in the [illegible] district is think of the business Were the authorities [illegible] opium of the traffic much more might certainly be done than [illegible] But whatever doubt may exist regarding the [illegible] intentions of the Government and its officials there [illegible] a vast number of people in the Empire who see clearly [illegible] effects of opium smoking deplore the extreme prevalence of the [illegible] is regarded by them as a great evil and the introduction of it by foreigners mainly one cause of hostility against them Their objections are [illegible] being founded on the belief that it is a deleterious drug the use of which [illegible] undermines the morals and undermines the health of the people

Considering the great amount of injury that opium smoking produces there can scarcely be any wonder that the good and virtuous should deplore the spread of the custom Of late years this pernicious habit has frequently been a cause of much embarrassment to the very rulers who connive at the practice It is related that as far back as 1832 of a thousand men sent by the Governor of Canton to act against the rebels the commanding officer sent back 200 rendered totally unfit for active service by the habit of opium smoking

Chinese physicians prescribe opium in various diseases and recommend the opium pipe in cases of obstinate ague or rheumatism and doubtless as a temporary measure it may afford relief although the cure may often prove worse than the disease by inducing the patient to commence a practice of using an article which he afterwards finds himself unable to refrain from

The general plan pursued for the cure of the habit of opium smoking is as follows the first thing to be done is to get the use of the opium pipe discontinued supplying its place at first by opium and camphor pills or small doses of Dovers Powder giving at the same time astringents as pomegranate etc to check the wasting diarrhoea that almost always follows as a sequence of abstinence from the habitual use of opium Tonics are also administered such as infusion of quassia with bitter tincture of any kind and any of the essential oils with camphor mixture wine ammonia and quinine and other tonics are also given when required A generous diet is recommended After continuing the opiates for a few days they are gradually reduced in quantity till they are left off altogether and the tonic is then given alone till the cure is complete When the confirmed opium smoker commences the plan of treatment here alluded to he generally suffers much from debility loss of appetite diarrhoea abdominal pain and soreness in all the bones but if the patient has resolution enough to persevere he may in the course of one or two months be reclaimed from the vice and again become a happy and useful member of society

Clinical Notes and Cases

SOME EXPERIENCES OF A DERMATOLOGIST IN A CRUISER IN THE MEDITERRANEAN

BY

Surgeon Lieutenant-Commander R. W. B. SCUTT, R.N.

H.M.S. *Sheffield* recommissioned 26th January 1955 and was stationed in the Mediterranean from March to September 1955.

Table I is a record taken from the Monthly Sickness Return showing the average weekly number of cases on the Attending List during the above period.

TABLE I

	Average upper deck temp.		*Upper respiratory tract infections*	*Dysenteries*	*Skin diseases*	*Other diseases*	*Injuries*
	DB	*WB*					
Feb	46	45	5	Nil	3	3	4
Mar	58	54	–	Nil	14	11	8
Apl	61	60	3	1	14	–	4
May	70	66	2	1	9	9	6
Jun	85	82	3	4	16	6	
Jul	79	78	4	1	18	5	
Aug	81	77	4	2	13	–	
Sep	68	66	2	2	19	5	4

It will be seen that the month of February was a sick month all round probably mainly because most of the ship's company were fit one day after commissioning to think about going in the Sick Bay.

As far as the *Sick List* and *Hospital Discharges* were concerned apart from a mild epidemic of upper respiratory tract infections during February and early March the figures over the whole period under review remained fairly constant varying between 1 and 4 per week on the Sick List and 0 and 3 discharges to hospital.

The relative importance of skin diseases will be readily apparent from the table. The proportion varied between 30 per cent. and 60 per cent. of the total. During the eight months under review a total of 227 skin cases were treated (an approximate incidence of 30 per cent. of the ship's company). Of these only 6 had to be treated on the Sick List and none for longer than a few days. No case was discharged to hospital.

[illegible] from simple [illegible] the non-fungal infection [illegible] the infecting [illegible] (sweat [illegible]) [illegible] climate.

Other skin conditions [illegible] of mild *miliaria* (prickly heat) [illegible] of severe *hyperidrosis* [illegible] *solar urticaria* [illegible] both Marines) and [illegible]

[illegible] Treatment

(1) *Infective Dermatitis*

(a) *Cellulitis* [illegible]

All responded to [illegible] penicillin.

(b) *Impetigo* [illegible]

All responded [illegible] treatment.

(2) *Intertrigo*

The routine treatment [illegible] drying cream [illegible] B.D.H. [illegible] dusting powder [illegible] gentian violet [illegible] 20 [illegible]

(3) *Hyperidrosis of the feet*

Simple [illegible]

(4) *Tinea*

(a) *Pedis* [illegible] Products) followed by [illegible] powder [illegible] socks and [illegible] tincture. [illegible] socks and shoes [illegible] generally [illegible]

(b) *Cruris* [illegible] in this [illegible] used in [illegible] not to apply [illegible]

(c) *Other* [illegible] of application.

H. R. Vickers (1942) [illegible] starting [illegible] [illegible] infection. [illegible]

ver that fungicides are much more likely to cause eczematization in a warm climate. It is suggested accordingly that the percentage of the active ingredient should always be reduced to half the normal.

There is absolutely no reason why at least one of the Sick Berth staff in every Depot or establishment in the Service should not be trained in the taking of scrapings and the microscopical examination thereof. In H.M.S. *Sheffield*, the P.O. (X-ray trained) took over the medical stores and laboratory work and after a fortnight's supervision was found to be able to report accurately on the presence or absence of fungus after microscopy.

(5) *Scabies*

All cases responded to a single application of benzyl benzoate.

(6) *Miliaria*

All cases were comparatively mild, presenting as superficial miliary pustules or vesicles chiefly on the trunk. They were all treated as acne with lotio nigra sulphurata zinci and responded well. There was no suggestion that they were in any way a relapse of a previous acne and in fact differed from acne in that the lesions were primarily vesicular or pustular and there were never papules, comedones or scarring.

It would seem likely that the majority of cases of tropical acne are in fact similar sterile infective eruptions of prickly heat and not in any way connected with true acne.

(7) *Eczema and contact dermatitis*

These were treated on simple classical lines with protection from further irritation and calamine emulsion or zinc paste spreads and later tar as the main therapeutic agents. No hydrocortisone was available.

(8) *Warts*

In addition to a carbon dioxide snow machine a small cautery was centrally situated and this made it possible for all warts to be treated on board. A detailed description of CO snow treatment was made by the author in a preceding number of this Journal (1936). To achieve results the length of application should be much greater than that recommended in the booklet that goes with the apparatus.

(9) *Acne*

All cases were greatly improved by sunbathing and very little other treatment.

Provision of Special Skin Clinic in the Sick Bay

Whittington (1943) suggested that there should be a separate skin clinic in the sick bay with one S.B.A. to deal exclusively with the treatment.

The staff situation in peacetime would rule out this arrangement but it was

found perfectly practicable for one of the staff to [illegible] treatment for a period of three months at a time. In this way not only was uniformity of treatment achieved but each of the junior staff got adequate experience in dermatological therapy.

Prophylactic Measures Practicable in a Seagoing Ship

(1) *Regular examination*

Examination of groups of men, e.g. by messes, in order to exclude skin disease (especially tinea) and arrange suitable treatment in the early stages. For the inspection a good light is essential and each individual should be completely stripped. After the whole skin surface has been quickly scrutinized the examinee should sit down and present each foot, separating the toes to reveal the toe clefts one by one, and finally raising the foot so that the sole may be inspected. Each examination should not take more than half a minute. Ideally, as Greenwood (1951) suggests, foot inspection should be carried out [illegible] but this is probably impracticable. As an example, the results of the examination of the Junior seamen division are as follows:

Number examined	54
Skin disease present in 23 (43 per cent)	
Maceration of toe clefts	8
Eczematized tinea pedis	7
Tinea cruris	1
Intertrigo of groins	1
Acne vulgaris	2
Mild miliaria	9

Early treatment of the above cases, especially those with foot lesions, produced excellent results and probably prevented widespread dissemination of [illegible] through a mess. It should be noted that in Coulthard's [illegible] was not treated unless severe or treatment was requested; the increase in incidence from 45.8 per cent to 81.9 per cent is therefore perhaps not altogether surprising. Tinea cruris and corporis were treated and the incidence did not change appreciably.

(2) *Bathroom Hygiene*

Gentles (1957) investigating outbreaks of tinea in a colliery was able for the first time to culture pathogenic fungi (*T. mentagrophytes*) from the asphalt-covered floors of shower baths immediately after use, thus conclusively proving that the disease could be passed on in this way. Vickers (1942) suggested that duckboards and matting in bathrooms are liable to pick up fungal elements from feet in a wet warm medium most favourable to their survival. He suggested that they should therefore be removed and the decks swabbed frequently with a mild antiseptic solution. He also recommended that the [illegible] should be encouraged [illegible] stepping straight out of a bath or shower into a [illegible]

[illegible] the end [illegible] the period. He sug[illegible] the fungus instead of changing [illegible] removed by frequent rinsing. [illegible] H.M.S. [illegible] the socks in [illegible] per cent [illegible] half an hour [illegible] through rinsing. The recurrence [illegible] in this series was 14 per cent. It is not known whether or not those [illegible] relapsed carried out the disinfection [illegible] conscientiously. [illegible] have been fresh infections.

Conclusions

It has no doubt long been recognized that skin diseases represent [illegible] proportion of cases on the attending list in any ship [illegible]. In this survey about 30 per cent. of the ship's company [illegible] 800 were treated over an eight months period [illegible] mostly ultimately of a comparatively minor nature [illegible] handled to result in an appreciable loss of man hours. [illegible] have been classified and details given regarding simple [illegible] conditions.

A plea is made for more careful investigation [illegible] microscopical examination of scrapings [illegible] should or should not be used.

Suggestions are made regarding the prevention of skin disease [illegible] ship.

Acknowledgment

My thanks are due to Surgeon Captain [illegible] B. [illegible] O.B.E., R.N., for permission to publish, and to Roche Products Limited [illegible] in this survey.

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HYDERGINE IN ANÆSTHESIA

BY

Surgeon Captain K WADDELOW MARTIN R N V R

A brief survey of 50 cases in which Hydergine was used in the lytic cocktail in routine anæsthesia in major surgery may be of interest The cases varied in age from 31 85 years and included the following operations

Partial gastrectomy Abdomino-perineal resection Gastro enterostomy Nephrectomy Exploratory laparotomy Cholecystectomy Transplantation of ureters Partial thyroidectomy Vulvectomy Ovarian cystectomy Perineorrhaphy Hysterectomy Myomectomy

In a previous series of cases chlorpromazine was used in the cocktail This however caused a most uncomfortable degree of palpitation to the patients during administration

In the present series patients were pre medicated with omnopon gr 1/3 and scopolamine gr 1/150 and the cocktail used was pethidine 50 mg hydergine 2 0 mg and promethazine 100 mg made up to 20 ml in distilled water Several of the patients during recovery period were very restless and tried to get out of bed but when pre medication was changed to morphia gr ¼ and atropine gr 1/100 this hyper restlessness ceased

A problem then arose when a patient said she was strongly allergic to opiates She was therefore given as a pre medication pethidine 100 mg and atropine gr 1/100 and the cocktail consisted of hydergine 2 0 mg and promethazine 100 mg made up to 20 ml in distilled water This proved very satisfactory and was used as a routine for the second half of the series

Administration details—On the evening prior to operation patients are visited and have explained to them the programme for the following day They are given sodium amytal gr 3 that night

An hour before operation pethidine 100 mg and atropine gr 1/100 are given The cocktail is then slowly administered to the patients in bed taking 5 minutes (They have previously been warned that they may feel them selves lifted on to the trolley) When they are taken to the anæsthetic room they are unusually exhibit a mild degree of respiratory depression an oxygen cylinder is carried under the trolley so that they can receive oxygen under positive pressure

In the anæsthetic room if the patient still seems awake nitrous oxide and oxygen in equal parts are administered for a short while Gallamine triethiodide 120 mg are then given When under controlled respiration intubation takes place and the patient is taken in to the theatre where all clothing is removed and nitrous oxide and oxygen in equal parts are administered

Gallamine triethiodide seems to take rather longer to work than with other forms of anæsthesia and the effect on the respiratory system wears off more

quickly whereas abdominal muscles remain flaccid for the surgeon. If the operation is prolonged and the patient shows signs of the cocktail effect wearing off a further appropriate dose of relaxant or a few breaths of trilene or cyclopropane are usually all that is required.

It appears that there is a tendency for a fall in blood pressure after about 40 minutes and therefore a constant check should be kept on this. If the fall is at all severe it may be satisfactorily restored by mephine 15 mg. given intravenously or intramuscularly according to the urgency of the situation. Transfusion was also used where there is likely to be much loss of blood.

Post operative instructions.—In addition to a blood pressure check for a couple of hours after operation chlorpromazine 25 mg. p.r.n. for restlessness and pethidine 100 mg. p.r.n. for pain are prescribed. In really aged patients initially the dose of pethidine is cut down to 75 or 50 mg.

Advantages of this type of anaesthesia.—(1) The patient goes to sleep in bed and usually knows no more until he wakes up several hours later in bed or even next morning.

(2) Several surgeons have spontaneously volunteered how smooth the anaesthetic is and what excellent operating conditions they are experiencing.

(3) The following morning patients appear much fitter and less shocked than with other types of anaesthesia and surgeons are again impressed with their condition at this time. This is specially noticeable in the aged and really ill.

(4) During the night following operation patients are calm and quiet and give one the impression much more of being in an induced sleep rather than under an anaesthetic. It has been noticeable that no congested chests have arisen out of this type of anaesthesia. This is probably due to a combination of factors—the atropine premedication the atropine like qualities of pethidine and promethazine and the sleep patients have had after operation in which they move slightly as in normal sleep.

TOBACCO AMBLYOPIA

BY

Surgeon Commander W. H. C. M. HAMILTON, R.N.

This condition is most unusual these days and the case to be described is one of two which I have now under treatment. Incidentally these are the first cases I have seen during my Service career.

The patient is an officer aged 46. From 1929 to 1944 he smoked 3½ oz. of a well known brand of pipe tobacco daily. In 1944 he changed to another well known brand and continued to smoke 4 oz. of this until 1956. He did not inhale. He came to see me in January 1957 complaining of his vision becoming blurred in the right eye and having developed a blind spot in his central

[illegible] His [illegible]

[illegible] he found impossible [illegible] himself [illegible] king into things on the right [illegible] I thought it advisable [illegible] The question of his being [illegible] because the Dockyard [illegible] Home Shore Service

[illegible] perfectly normal on the Lister [illegible] demonstrated on the [illegible] and the central fixation point

[illegible] put on Vitamin [illegible] marked improvement is not [illegible] officer has recovered normal vision [illegible] appeared

[illegible] another officer [illegible] in the [illegible] less marked

[illegible] this I believe is [illegible] strong tobacco [illegible] Both these officers admitted [illegible]

[illegible]

[illegible] C.B., O.B.E., M.D. [illegible]

A CASE OF DECOMPRESSION SICKNESS

in

Surgeon Commander F. R. ASTON, R.N.

[illegible] case of Decompression Sickness occurred on 2[illegible]th May 195[illegible] [illegible] from the Norwegian salvage ship [illegible] on the sunken Swedish [illegible] Cloch Point in the Firth of Clyde. The diver had been at a depth of 80 feet [illegible] standard equipment and breathing air. According to the R.N. [illegible] total decompression time of 32 minutes [illegible] communications between the diver and his [illegible] three minutes.

[illegible] the patient spoke only Norwegian [illegible] for three hours. Later it was found that he was aged 45 [illegible]

The pa[illegible] to the Larkhill Hospital Greenock for further observation as it was th[illegible] that some permanent damage might have been done due to the rebreath[illegible] ce symptoms and the delay before he could be recompressed In Larkhill H[illegible] he had an E.C.G radiological examination of chest joints and long bones [illegible] a lipiodol myelogram and a general neurological examination He also had [illegible] treatment for his lower limbs All investigations proved negative M[illegible] few [illegible] became normal and he was fit to return to Norway two weeks [illegible]

Discussion

This case is probably of the type known in diving circles as the "chokes" and is caused by the formation of gas emboli in the pulmonary circulation after rapid decompression It is often fatal unless the patient is immediately recompressed

The case described is a useful demonstration of the serious consequences of disregarding the rules of decompression after diving for long periods in deep water It is not an uncommon occurrence in civilian diving operations

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A CASE OF GLANDULAR FEVER WITH PULMONARY INVOLVEMENT

BY

Surgeon Lieutenant J. C. J. STOKE, R.N.

Glandular fever has become one of the commonest infectious diseases in Service practice In fact if the common cold and influenza group are excluded its incidence in the Portsmouth Command in 1956 was second only to that of pulmonary tuberculosis (Report of N.M.O.H. Portsmouth Command 1956) Reports of pulmonary involvement are uncommon however and because of this the following case is of interest

CASE REPORT

A male aged 26 was admitted to Royal Naval Hospital Portland on 25.9.57 as a [illegible] f pyrexia of uncertain origin He had been quite well until eight days before when he developed malaise accompanied by a persistent pyrexia and aching pains in the limbs Two days prior to admission he had developed an unproductive cough

On admission he was pale and sweating with a temperature of 101° F pulse rate 96 respirations 20 There was no lymphadenopathy splenomegaly or rash and no buccal inflammation was present Clinically the chest was clear

Investigations

Hb.—100 per cent. W.B.C. 17,500 (polymorphs 24 per cent mononuclears 76 per cent Many glandular fever cells present) E.S.R.—4

Virus agglutins—Influenza A positive 1 in 4 There was no agglutination against influenza B or C A.F.C. group Q fever or psittacosis L.G.V

Cold agglutinins—and streptococci—M.C. agglutination tests—negative.
Paul Bunnell—positive 1 in 448.

Chest X-ray.—The left hilar shadow is hazy and ill-defined. A small oval area of shadowing is seen in the left costo-phrenic angle. The appearances are suggestive of a pulmonary virus infection.

Progress was uneventful, the chest X-ray being repeated as normal after one week. He was apyrexial ten days after admission.

COMMENT

Radiological evidence of enlarged mediastinal glands in patients suffering from glandular fever is uncommon and involvement of the lung parenchyma remains very rare. Although Rigg Gunn (1954) in a review of 412 cases of glandular fever reported 11 in which there was a superadded chest infection, there were none in which pulmonary radiological changes could be attributed to the disease itself. However this may well have been due to the fact that chest X-ray is not carried out routinely in patients with glandular fever. McCort (1949) reporting on 43 cases in which this was done found 2 with enlargement of the mediastinal glands and 5 with pulmonary parenchymal changes 3 of which also had enlarged mediastinal glands. In all of these the radiological finding was incidental and in no case was there any great resemblance to an atypical or bacterial pneumonia. In the case reported here, however, the chief manifestation of the disease was pulmonary and its course was very similar to that of a virus pneumonia.

The pathology of these pulmonary changes is uncertain. Custer and Smith (1948) on the basis of post-mortem findings suggest that they are due to engorgement of the hilar lymph nodes and infiltration of the intra-alveolar septa with atypical mononuclear cells.

SUMMARY

A case of glandular fever with pulmonary involvement is described and the literature is reviewed briefly.

ACKNOWLEDGMENT

I wish to thank Surgeon Captain W. V. Beach, *O.B.E.*, F.R.C.S. (Ed.) for permission to present this case and for his help in the preparation of this paper.

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ROYAL NAVY MEDICAL CLUB

The Royal Navy Medical Club held a reception at the Royal College of Surgeons by kind permission of the President and Fellows on Friday 12th April

The guests were received by the Medical Director General Surgeon Vice Admiral R C May *CB MC* FRCS QHS and included The First Lord The Earl of Selkirk The First Sea Lord Admiral of the Fleet Earl Mountbatten of Burma The Second Sea Lord Admiral Sir Charles Lamb The Secretary of the Admiralty Sir John Lang The Presidents of the Royal Colleges and the Royal Society of Medicine The Director General of the Army and RAF Medical Services and the Director of the Army and RAF Dental Services Captains J L Miser and O Schneider US Navy Lieutenant Colonel Prakash Indian Army

The Royal Navy Medical Club meets once each year usually to dine at the Royal Naval College Greenwich Membership is open to every Medical and Dental Officer who is serving or has served in the Royal Navy or Royal Naval Volunteer Reserve New members pay one subscription only of £2

The Annual Dinners are usually supported by about 250 members and their guests who are able to enjoy all the amenities of Greenwich at a cost well below that of any Civilian Establishment Eminent men in Medicine and the Services are asked as Guests of the Club It is nearly always possible to arrange for 2 to 3 members attending the Dinner to sit together The main criticism levelled against the Dinner is that there are so many old friends and acquaintances present that it is impossible to get round and see them all in the time available

Applications to join should be sent to the Secretary Royal Navy Medical Club Medical Department of the Navy Queen Annes Mansions St James s Park London S W 1 together with a cheque for £2

Reviews

Official History of the Canadian Medical Services, Vol. 1. By W. R. Feasby, B.A., M.D. [illegible] Colonel R.C.A.M.C. Supplementary Reserve, [illegible] University of Toronto. First Edition 1956. Pp. [illegible] Ottawa: Queen's Printer and Controller of Stationery. [illegible] the Minister of National Defence. Price 5 dollars.

This volume, which covers Organization and Campaigns, [illegible] work upon which Dr. Feasby is to be congratulated. Its size in no way detracts from the enjoyment which it gives the reader, for the narrative is absorbing from beginning to end. As we have come to expect in our Commonwealth Histories, the publication technique has been excellently contrived, with plates, maps and charts beautifully executed. The English Medical Historian can but feel a pang of envy for the inclusion of paintings by Canadian War Artists.

The bulk of the volume is concerned with Military Medicine, and it is therefore disappointing, especially to those of us who have reason to thank our Canadian Medical and Nursing colleagues for their help, to find only 11 out of 568 pages devoted to their activities in the Second World War. 100 Canadian Medical Officers were loaned to the Royal Navy and 400 were employed altogether. 9 doctors, 1 nursing officer and 16 sick berth ratings lost their lives by enemy action. 29 members of the Medical and Nursing Services were decorated and 22 mentioned in dispatches.

Experienced Naval Medical readers will enjoy the sections which deal with Preventive Medicine. They will not be surprised to find yet again in an Official Medical History how laxity in anti-malarial precautions by units and individuals could be devastating in effect. During the Sicilian Campaign up to May–August 1943 there were 1,184 cases of actual or suspected malaria in the 1st Canadian Infantry Division. Over a fourteen day period, in a Division some 15,000 strong, 1,043 hospital cases represented a monthly incidence of 128 per 1,000.

In analysing the Dieppe Raid one of the conclusions recorded is that the Royal Naval Medical Officer who was S.M.O. of the force should have been in the headquarters ship as from his position in the reserve headquarters ship he was unable always to keep abreast of events. Our own history does not contain this record, neither does it refer to the officer by name. It does, however, record that the S.M.O., who had previously been mentioned in dispatches, was decorated for his gallantry on this occasion.

A Therapeutic Index. By C. M. Miller, M.D., M.R.C.P., and B. K. Ellenbogen, M.D., M.R.C.P. Second Edition. 1957. Pp. xii + 156. London: Baillière, Tindall and Cox. Price 12s. 6d.

This is only a small book little bigger than a diary. 123 of its 156 pages are devoted solely to treatment—treatments which despite its limited scope are interestingly described and are entirely up to date.

The diseases catered for are in alphabetical order, thus dispensing with an index in a book as brief as this—and its very briefness is one of its main attractions—it is astonishing how comprehensive it manages to be. There are also sections on practical procedures, diets, conditions, urine examinations and normal values. A little Hercules of a book which can be strongly recommended.

[illegible] Revised by Lambert Charles Rogers V.R.D. M.D. Mast. F.R.C.S. F.R.C.S.E. F.R.A.C.S. F.A.C.S. Professor of Surgery, Surgical Consultant to the Royal Navy. Fourth Edition. 1957. Pp. x + 591 with 202 illustrations. London: Cassell and Company Limited. Price 30s. net.

This is the latest edition of a well known classic which has been many times revised and which is packed with the facts of Surgical and Applied Anatomy. It is concisely written not in the least dry to read and a model of what such a work should be.

The volume is of handy size and the only minor criticism that the reviewer could make is that the size of the page in many cases necessitates small somewhat cramped illustrations in certain instances.

The work would be improved by larger and clearer illustrations uniform in presentation.

Pulmonary Complications of Abdominal Surgery. By A. R. Anscombe, M.S. (Lond.), F.R.C.S. (Eng.), Senior Lecturer in Surgery and Hon. Consultant, St. George's Hospital. First Edition. 1957. Pp. x + 121 with 36 figures, illustrations included. London: Lloyd-Luke (Medical Books) Limited. Price 20s. 0d. net.

This book is an illustration of work done for the winning 1955 Moynihan Prize Essay with an thesis accepted for the degree of Master of Surgery in the University of London in January 1956.

I think that it will undoubtedly become a classic. Pulmonary Complications of Abdominal Surgery are clearly and simply discussed together with the cause of them, diagnosis and methods of treatment. The figures include graphs, drawings and illustrations and are exceptionally clear and one of the many attractive features of the book. The whole volume is of great interest, easy to read and I imagine that there will be few Surgeons who do not read it from cover to cover in one session once they have picked it up. The book deserves a place in any Surgical Library.

Living Conditions and Health. A Medical Quarterly. Annual Subscription Rmb. 26s. 0d. Single copies 7s. 6d.

This is a new International Quarterly Medical Journal published in six countries (London, Moscow, Paris, Peking, Santiago, Vienna) and appearing in identical form in English, Chinese, French, German, Russian and Spanish.

The Journal is the result of a meeting of a World Congress of Doctors for the study of Present Day Living Conditions held in Vienna in 1953 at which doctors from 32 countries exchanged views on Living Conditions and the Health of the People. The Repercussions of War on Physical and Mental Health. The Doctor's Tasks in the Face of these Problems.

The participants defined some of the principles of the World Congress as follows:

G. Teruuka and H. Saito (Japan): Protein and Labour: An Investigation of the Protein Requirements of Workers.

H. Desoille (France): Conditions of Work as a Fundamental Pathogenic Factor.

A. B. Svitsky (U.S.S.R.): Organisational Principles, Results and Current Problems of the Fight against Cancer in the U.S.S.R.

H. Macdonald (Great Britain): Migration and Tuberculosis.

The appearance of this new journal is part of the endeavour to carry out these principles.

The first volume contains articles on the above mentioned subjects and other contributions from Czechoslovakia and China.

The Editor in Chief is Dr. F. Scholl Austria. Orders for the English edition may be sent to Dr. A. Ryle, The Caversham Centre, London, N.W.5.

Simulium and Onchocerciasis in the Northern Territories of the Gold Coast By G Crisp B Sc. Ph D F Z S F R E S. Director Entomological Unit British Empire Society for the Blind Pp xvi + 171, with 49 illustrations and 5 maps London H K Lewis and Company Limited. Price £2 17s. 6d

Preventable blindness forms a serious social problem in several territories of the British Commonwealth especially in the African Continent and this problem is being vigorously attacked by the British Empire Society for the Blind at whose request this monograph has been published. Trachoma and ophthalmia are well known causes of blindness but onchocerciasis is also a devastating scourge in the Gold Coast Region producing its dire results through chorioditis or keratitis. The worms which cause the disease are passed from one human being to the next by the intermediate host—a fly of the species *Simulium Damnosum*.

Dr Crisp in this masterly treatise has dealt with every aspect of the life and habits of Simulia and has proposed methods for their wholesale extinction. The work embodied in this project has been arduous and formidable. The breeding grounds are in and beside rivers the periodic treatment of which by oily solutions of D.D.T can produce drastic reduction in the larval infestation. The photographs maps and general production are excellent. This volume would also serve as an admirable model for any post-graduate student who might wish to prepare an epidemiological thesis for a higher degree.

We acknowledge with thanks receipt of the following publications

Acta Medica et Biologica Anales De La Facultad de Medicina Montevideo Annals of Tropical Medicine and Parasitology Annales Medicum Internae Fennicae Annual Report of the Research Institute of Environmental Medicine Nagoya University British Medical Bulletin British Medical Journal Bulletin Internationale des Services de Sante Chinese Medical Journal Guy's Hospital Gazette Journal of the Royal Army Medical Corps Journal of the R N Scientific Service, Kyushu Journal of Medical Science Medical Journal of Osaka University Middlesex Hospital Journal Mie Medical Journal, Military Medicine Nagoya Journal of Medical Science Physiologica Bohemoslovenica Proceedings of the Staff Meetings of the Mayo Clinic Russia Di Medicina Aeronautica St Mary's Hospital Gazette St Thomas's Hospital Gazette, The Australian Journal of Experimental Biology and Medical Science The British Journal of Surgery The Broad Way Westminster Hospital The Journal of the Baroness Gray School of Medicine The Journal of the Irish Medical Association The Kumamoto Medical Journal, The Medical Press The Tohoku Journal of Experimental Medicine Tropical Diseases Bulletin University of Durham Medical Gazette Yokohama Medical Bulletin

BOOKS RECEIVED

Brompton Hospital Reports Vol XXIV 1956 Pp xi + 324 London Lloyd-Luke (Medical Books) Limited Price 15s 0d net

News of the Service

OBITUARY

[illegible] QUINN, R.N. (Ret.) died on the 2[illegible] March 1957 at the age [illegible] 1898 [illegible] his medical degrees M.B., Ch.B., B.A.O. in the [illegible] University [illegible] the Royal Navy as Surgeon Lieutenant [illegible] Promoted [illegible] Commander in 1930, Surgeon Commander in [illegible] Surgeon Captain [illegible] He was placed on the Retired List [illegible] on [illegible] 1951.

During World War II Surgeon Captain Quinn served in H.M. Ships [illegible] Wales [illegible] Hood.

[illegible]

After [illegible] of his health and progress [illegible] a great shock [illegible] friends [illegible] and outside the Service [illegible] the death of Surgeon Captain F. B. Quinn. [illegible] intense disappointment he was invalided from the Royal Navy in 1951 and [illegible] to live in the Channel Islands, where he appeared [illegible] making [illegible] progress.

[illegible] character [illegible] who got hard work [illegible] all [illegible] an easy [illegible] which had its [illegible] Service life. The help and friendliness he extended towards his juniors [illegible] of him.

[illegible] Principal Medical Officer during the [illegible] commission of H.M.S. [illegible] Wales [illegible] the distinguished company on board in the Prime Minister [illegible] immediate friendship with H. V. [illegible] Atlantic Meeting [illegible] Surgeon Captain Quinn was [illegible] of his ship and [illegible] all who knew him will endorse.

Surgeon Captain M. J. SMITH, R.N. (Ret.) died on the 21st November 1956, aged 87 [illegible] 1869. He qualified M.B., B.Ch. Dublin in 1894 and obtained the [illegible] 1901 and F.R.C.S.I. in 1902. He entered the Royal Navy as a Surgeon [illegible] November 1895. Promoted Staff Surgeon in 1903 and Surgeon Commander [illegible] placed on the Retired List on the 30th October 1919 with the rank of [illegible] Captain.

[illegible] World War I Surgeon Captain Smith served in H.M. Ships *Magnificent*, *Essex* [illegible] and *Conqueror*.

HONOURS AND AWARDS

The Medical Director General, Surgeon Vice-Admiral R. C. May, *C.B., O.B.E., M.C.* [illegible] Fellow of the Royal College of Surgeons.

Companion of the Order of the Bath

Surgeon Rear-Admirals D. Duncan, *O.B.E.* and A. A. Pomfret, *O.B.E.*

Member of the Royal Victorian Order

[illegible] Commander P. G. Burgess, R.N.

[illegible]

Surgeon Commander [illegible] RN

[illegible]

Surgeon Rear Admiral [illegible] *OBE*

[illegible]

Surgeon Captain [illegible] RN [illegible] *QHP*
Surgeon Commander [illegible] RN [illegible] *OBI*

Mentioned in Despatches

Surgeon Lieutenant Commander [illegible] C B Bedford RN
Acting Surgeon Lieutenant [illegible] P G Harries RN

Gilbert Blane Medal

The Gilbert Blane Medal for the year 1957 has been awarded to Surgeon Commander S Miles RN

Polar Medal

A clasp to the Polar Medal has been awarded to Surgeon Lieutenant Commander D C Dalgleish RN

HIGHER DEGREES

Diploma in Medical Radiology (DMRD)—Surgeon Commander [illegible] RN
Diploma in Tropical Medicine and Hygiene—Surgeon Commander [illegible] RN
Diploma in Public Health—Surgeon Lieutenant Commander H R Mills RN
Diploma in Ophthalmology—Surgeon Lieutenant B Waters RN

PROMOTIONS

To Surgeon Rear Admiral—D M Bruce *OBE* QHS (23.10.57) has Medical Officer in Charge RN Hospital Plymouth and Surgeon Rear Admiral A A Pimblett
To Surgeon Rear Admiral (D)—C J Lukis QHDS (1.11.57) has Deputy Director of Dental Services and Surgeon Rear Admiral (D) L B Osborne
To Surgeon Lieutenant-Commander H J V Elkin (14.4.57) K P O Bruce (2.3.57)
To Surgeon Lieutenant Commander D [illegible] K C Duff (2.2.57) R I Drew (20.1.57)

The following provisional selections have been announced for promotion to date 31st December 1957:

To Surgeon Captain W B Taylor L D Caldwell
To Surgeon Commander—R H Cowling, W E Crocker R J Jolly B V Jones I G H Le Clercq
To Surgeon Commander (D) C N Pierce J C Richards

Royal Naval Volunteer Reserve (30th June, 1957)

To Surgeon Captain—K W Munn *TD*
To Surgeon Commander—J Alexander W F A Buchanan C I Drew F C Curtis

Royal Canadian Navy (1st July, 1957)

To Surgeon Commander—E L Collins H C Smith C W Wheeler

TRANSFERS TO PERMANENT LIST

Surgeon Lieutenants—J R Lawrance-Owen R V Williams

ENTRIES FOR SHORT SERVICE COMMISSION

W D Chalmers M R C S L R C P C W Chapman, M B Ch B J Clifford M B Ch B H R Falconer M B C B K J Kesketh M B B S M R C S L R C P J D Jenkins, M B, B Ch R D Jones M B B Ch A McEwan L R C P L R C S L R F P & S M McKendrick M B B S D L Norrie M B, Ch B T W Patey M B, Ch B R R Pearson M B B S R W K Rogers M B B S W F Speers M B, B Ch, J M Wilde M B Ch B I Kleinman L D S L O Lidbetter L D S M G Smith, L D S P R G Williams L D S

TRANSFERS TO SHORT SERVICE COMMISSION

Ly Act Surgeon Lieutenants (D)—J R Fuldhouse G M Gillespie

RETIREMENTS

Surgeon Commander G M Baird R N

Surgeon Lieutenants—M R Coster J I Currie P P Keith M J O'Neill R Pyle J C J Stoke.

APPOINTMENTS IN THE NAVAL RECRUITING SERVICE

(Final Medical Examining Officer)

Bristol area—Surgeon Commander A L Moorby R N (Rtd) 1st June 1957 vice Surgeon Captain W F Vicary R N (Rtd)

WARDMASTER OFFICERS

PROMOTIONS

To Wardmaster Lieutenant Commander—R F Hounsome (1 4 57)

To Wardmaster Lieutenant—A J Hanks (1 4 57) C Jones (1 4 57) S C. Knight (1 4 57)

To Acting Wardmaster Sub-Lieutenant—S B C P O E R King C/MX 59001 (13 4 57)

RETIREMENTS

Wardmaster Lieutenant-Commander L J Carter *M B E*

Wardmaster Lieutenant C H Bastable

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

HONOURS AND AWARDS

Officer (Sister) of the Order of St John of Jerusalem

Matron in Chief Miss B Nockolds, *R R C Q H N S*

Associate of the Royal Red Cross

Superintending Sister Miss M E Lewis Head/V.A.D Miss J M Workman

PROMOTIONS

To Matron—Miss O M Molyneux *A R R C*

RETIREMENTS

Matron Miss E M J Wakeham *A R R C*

Senior Nursing Sisters Miss D Vedy Miss M J Steele

ADMIRALTY FLEET ORDERS—1957

(This page ... perforated for filing)

823.—Invaliding—St. John and Red Cross Ex-Services War Disabled Help Department.

888.—Medical—National Blood Transfusion Service—Co-operation with and Facilities for

936.—Dental Treatment—Entitlement, Facilities, Records, Returns, etc., and Scale of Fees.

941.—Establishments—R.N. Hospital Portland—Transfer to Ministry of Health.

951.—Courses—Officers—Medical Officers—Courses in Medical Aspects of Underwater Warfare and Survival at Sea in 1957

962.—Medical, Dental and Hospital Consultants

974.—Medical—Venereal Diseases—Kahn, Wassermann and Price Test Results.

1004.—Medical and Dental Stores—Economy in Use.

1100.—Medical—Diving Courses—Medical Examinations Prior To

1105.—Ratings—Sick Berth Staff—Instruction in Use of Service Afloat X-ray Unit

1186.—Medical—Paint Spraying—Precautions.

1189.—Prizes—Sick Berth Petty Officers Efficiency Medal

1193.—R.M.N.—Volunteers Required for 2½ Years Loan Service—Surgeon Lieutenant

1199.—Surgeons and Agents.

1202.—Officers—Medical Officers Serving in Aircraft Carriers and at Naval Air Stations—Flying Experience

1221.—Medical Stores—Proprietary Medicines.

1260.—Prizes—Gilbert Blane Medal—(a) Award for 1957 (b) Reports for the 1958 Awards.

1268.—Ratings—Sick Berth Ratings—Specialist Training

1274.—Medical—R.A.F. Medical Rehabilitation Units—Admission of R.N. and R.M. Personnel.

1275.—Medical Research—Co-ordination—REPORTS

1276.—Officers—Dental Officers and Dental Surgeries in Cruisers

1358.—Forms—F Med.141—Suicidal Caution Card—Introduction

1383.—Establishments—R.N. Medical Depot Ferry Toll Road Rosyth—Closing

1389.—Dental Treatment—Entitlement, Facilities, Records, Returns, etc., and Scale of Fees.

1452.—Medical—R.N. Medical Bulletin—Issue No. 4—Distribution

1514.—Medical—Hospital and Dental Treatment Abroad

1515.—Medical—Monoocular Personnel Regulating Branch and Sick Berth Staff Engaged on Mental Nursing Duties—Supply of Unsplinterable Glass Spectacles.

1523.—Ratings—Sick Berth Ratings—Register of Laboratory Assistants—REPORTS.

1580.—Medals, Decorations, Honours—Birthday Honours List, 1957

1581.—Medals, Decorations, Honours—"London Gazette" of 11th June, 1957

1582.—Medical—Disposal of Personnel Permanently not Fit for General Service

1613.—Medical Stores—Vote 3—Items in Excess of Scale

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Notice

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of the
Royal Naval Medical Service

Articles

FAT-CONSUMPTION AND CORONARY DISEASE—THE EVOLUTIONARY ANSWER TO THIS PROBLEM*

A Basic Approach to the Prevention and Arrest of Coronary Disease

BY
Surgeon Captain T. L. CLEAVE, R.N.

PART I — THE NATURAL LAW OF ADAPTATION AND THE INSTINCT OF APPETITE

The great increase in the incidence of coronary disease in civilized countries during recent times has led to world-wide investigations which have largely resulted in blaming the increase on an over-consumption of fat. A state of confusion however, exists in this respect and this monograph will endeavour to show that in the matter of high fat consumption is a cause of coronary disease the extreme importance of evolutionary principles has been overlooked and that the whole problem is greatly clarified if those principles are brought into play.

The evolutionary principle mainly concerned has to do with the sense of taste or more comprehensively the instinct of appetite and it will be necessary to make a few preliminary remarks about this instinct.

In the first place it follows from the acceptance of the Darwinian theory that any organism must be very perfectly adapted to its natural environment i.e. the environment in which the organism has for much the greatest part been evolved. This aspect of Darwinism will hereafter be referred to as the natural law of adaptation or for short as the (Darwinian) principle.

This principle indicates that as regards the instinct of appetite an organism may rely on this with absolute confidence to tell it what it should eat or not eat BUT ONLY AS LONG AS THE INSTINCT IS BEING EXERCISED ON NATURAL SUBSTANCES that is on substances occurring in the natural environment of the organism.

* This paper together with a foreword by Peter Shanks, L.R.C.P., M.R.C.S., M.R.C.P., D.P.H. has been published in pamphlet form as a supplement to monograph by Messrs. John Wright & Sons, Ltd., Medical Publishers, Bristol.

[illegible] Man will be able to rely on the tongue com[illegible] poisonous plant like the foxglove which occurs [illegible] and which has an intensely bitter taste but not [illegible] the synthetic mixture which it is been dug up from below the earth's surface [illegible] pyrites and has never existed in his natural environment and which is practically tasteless Even if a man or animal were killed by eating a naturally occurring plant it would in no sense invalidate the Darwinian principle it would merely indicate that in the struggle for existence between the man or animal and the plant in this case the victory lay with the plant but such an event apart from its great rarity has no application to normal food problems today

It is therefore not possible to agree with Yudkin[1] when he ignores the case of a child eating lead polish as an example of the unreliability of the instinct of appetite We could quote a thousand unnatural substances of this sort where the instinct could not be relied upon but the purpose of this paper is to point out that the Darwinian principle teaches us that by exercising this instinct on natural substances we may rely on it with complete confidence and so enlist to our aid one of the most valuable things on earth

If we are to rely on this instinct we do not have to exercise it only on raw food The human race has now been cooking food for probably some 200 000 years and it has become by evolution considerably adapted to it as alterations in the jaws of modern skulls clearly show Food which has been simply cooked may, therefore be eaten with every confidence But this argument most certainly does not apply to such gross alterations in food as those produced in the refining of flour and sugar which so far as the main mass of the population is concerned have existed for only a century or two—a time too short to allow any adaptation worth the name As the writer hopes to elaborate elsewhere, the unnatural increase in concentration produced by these processes amounting in the case of sugar to no less than ninefold frequently leads to an over consumption attended by serious consequences However it will be seen shortly that this danger from increased concentration does not occur with fats

We now direct our attention to coronary disease and shall understand the importance of the above preliminary remarks as we continue

Part II.—Increased Incidence of Coronary Disease

The increased incidence of coronary disease in Great Britain (and in many other civilized countries) since the turn of the century and especially since the 1920's is generally admitted but there is a difference of opinion as to whether the increase is in coronary atheroma or in coronary thrombosis Morris[2] has endeavoured to show that during this period the increase has been largely in coronary thrombosis not in coronary atheroma, although in four-fifths of the cases of coronary thrombosis there is well marked coronary atheroma and even in the remaining one-fifth there is atheroma of lesser degree This has led to the view chiefly prominent in this country that alterations in blood coagula

[illegible] coronary thrombosis from coronary atheroma, and there have been conflicting reports on whether fatty meals do or do not increase the coagulability of the blood.[3 4] However as has been pointed out,[5] the incidence of coronary thrombosis is fairly constant throughout the day and night whereas if post-prandial lipæmia were a factor a decreased incidence during the night would undoubtedly be expected.

Although it appears certain that if coronary atheroma could be prevented coronary thrombosis could be prevented it is probable that there is some difference in the ætiology of the two components of coronary disease. For example a long continued slight excess in fat consumption might cause the chronic coronary atheromatous changes whereas a transient big excess (surfeit) might lead to more acute changes of the same type resulting in a thrombosis rather as occurs in the injection treatment of varicose veins where small amounts of the injection cause changes in the vessel walls especially round the valves and large amounts cause more profound changes resulting in thrombosis. This is the most obvious conception of the difference and would appear to merit a sustained refutation before being superseded by any more complex conception. It would explain *inter alia* the long term upward trend in the mortality from coronary disease and the transient fall in mortality in national countries during the recent world war. In any case as far as the arguments in this paper are concerned it will not be necessary to separate the thrombosis from the atheroma in discussing the relationship to high fat consumption the composite term coronary disease will therefore be used for both.

It may be added that cardiac infarction commonly occurs of course from coronary atheroma alone without thrombosis.

Part III.—Evidence for Relating Coronary Disease to an Over-Consumption of Fat

This paper is not concerned with proving the relationship between fat-consumption and coronary disease but with showing that the Darwinian principle has an important field of application in this relationship if it exists. It is however essential to discuss briefly the evidence that has been accumulated in favour of the relationship so that it may be freely referred to.

Of this evidence there may be mentioned the deposition of cholesterol in the walls of coronary and other arteries showing atheroma its deposition in the arteries of animals fed with huge amounts of this substance as first pointed out by Anitschkow and others in St Petersburg in 1911–13 and the tendency for coronary disease to be associated with a high blood cholesterol.[6 7] Since the blood cholesterol is derived from fat these observations have naturally pointed to an over-consumption of fat in the diet and indeed races with a high fat consumption have—with one exception referred to later—a greater incidence of coronary disease than those with a low fat consumption.

Modifications of the above view have tended to incriminate fats mainly consisting of saturated fatty acids rather than those mainly consisting of un-

[illegible] fatty [illegible] greater effect on [illegible] height of the blood [illegible] that conver[illegible] [illegible] in the [illegible] the disease.

A different [illegible] deprive [illegible] with the [illegible] B complex.

[illegible] and prob[illegible] [illegible] evidence of [illegible] which [illegible] is that [illegible] congenital diffi[illegible] [illegible] fat (but not sugar) resulting not only in a high blood [illegible] hypercholesteraemia) but also in visible deposits of [illegible] and elsewhere (xanthoma and xanthelasma) have a [illegible] of coronary atheroma and a very high mortality from [illegible]. Thus in 201 persons belonging to 35 families investigated by [illegible] and others there was hypercholesteraemia in 60 per cent, [illegible] in 40 per cent, xanthelasma in 30 per cent and xanthoma in 12.5 per cent. Many other similar series have been reported, and Harris Jones, Graham Jones and Wells[119] have recently published one in this country. In these patients limitation in fat consumption may have a favourable effect.

The second clinical observation is that in diabetes mellitus, unless carefully controlled, the disordered fat metabolism tends to produce a heavier than normal alimentary lipaemia, high blood cholesterol figures (sometimes approaching those occurring in essential hypercholesteraemia) and even frank xanthelasma and xanthoma, and coronary disease is so prevalent that some 50 per cent. of all diabetic deaths are due to this cause.

These two clinical observations definitely appear to link cholesterol with coronary disease as a cause rather than an effect.

There is also a subsidiary clinical observation of considerable, though negative, significance, which is that obesity is definitely not prominent in cases of coronary disease.[120] Since obesity has long been recognized as related to an [illegible] consumption of carbohydrate and not of fat (in fact, Kekwick and Pawan[121] have shown that the best reducing diet is a high fat diet), this non-prominence of obesity in coronary disease would be expected if coronary disease were related to an over-consumption of fat. The picture would be very different if the disease were related to an over-consumption of carbohydrate.

Although the evidence linking fat consumption and coronary disease is therefore strong, mainly owing to the clinical evidence, the present confusion of medical thought on this subject is great and is well summed up by Morris:[122]

"What might be called the 'appeal to epidemiology' was persistently refusing [illegible] hypotheses of a single or simple dietary aetiology for ischaemic heart disease. In the present climate of opinion such a negative role was exceedingly

uncomfortable. But it [illegible] correlate what was known of [illegible] was known of trends in [illegible] variations in mortality among Western countries having [illegible] dispersal of any story that total fat consumption was the critical factor. The trend of consumption of butter fat in the United Kingdom showed [illegible] relation the steep increase in coronary deaths since 1943 was only one illustration of this. Changes in vegetable fat intake followed the mortality spectrum more closely and changes in hydrogenated fat intake were even more closely reflected in the mortality figures except for the social class distribution. Coronary mortality which did not agree with the pattern of nutritional intake. International experience was even more contradictory. Norwegians who ate a lot of margarine, seemed to have far less fatal coronary thrombosis than New Zealanders who ate very little. Perhaps the fish the Norwegians ate protected them but this did not seem to help Aberdeen which registered more than coronary death rate of Oslo. In terms of the total of essential fatty acids themselves the only available data for the United Kingdom gave no support to the hypothesis that the population was now suffering from an absolute or relative deficiency of essential fatty acids and international comparisons again showed anything but a homogeneous picture.

This confused picture of fat-consumption and coronary disease exists nearly half a century after Anitschkow and his colleagues in St. Petersburg first gave indications of the relationship. To judge by such rate of progress years of further investigations would appear needed in order to obtain any advance from the present position. Yet the application of the Darwinian principle enables the whole problem at once and indeed points the way to the prevention of the disease.

As the principle underlies the possibility of the instinct of appetite being at fault any over-consumption of fats must be due either to some alteration from the natural state in the fats themselves which would render the instinct no longer reliable or else to some unnatural interference with the exercise of the instinct. We shall first deal with the former.

Part IV.—Application of the Natural Law of Attraction to the Fats Themselves

To begin with the principle clearly explains all naturally occurring fats and indicates that Man may eat with perfect safety any fats existing in his natural environment as long as he eats them in such proportion to his appetite. These fats in our case include all animal fats such as beef, mutton, lard, pork

Not only is this important point clearly understood in theory it is also strongly supported in practice. Thus coronary disease appears to be strikingly rare in races living under relatively primitive conditions wherever such races have been investigated. These investigations though they may be individually open to criticism are collectively impressive and have included investigations on races

as for separate [illegible] and Eskimos [illegible] to the Bantus [illegible] Most of these races have had low fat diets the Eskimos however form a striking exception in this respect, as their diet even today is as high in fat as any in the world and they require special consideration Sinclair[113] in his paper on this race writes as follows

Wilbur and Levine (1930) concluded that in the Alaskan Eskimos there is a consistently high serum cholesterol on the one hand repeated clinical surveys on the other indicate an almost total absence of cardio-vascular renal diseases in the population Others have commented on this absence in the Eskimo on his customary diet Rabinowitch (1936) believed he had 'definitely disproved the incidence of arterio-sclerosis in the Eskimo or at least in the Eastern Arctic his data seem to show that it was common in those Eskimos consuming our diet but there was no evidence of arteriosclerosis in the most northerly parts he visited where the true Eskimo dietary was practised The same seems to be true of diabetes mellitus and appendicitis

Those who are convinced that coronary disease is related to a high fat-consumption and a high blood-cholesterol may like Keys[103] wish to contest these findings of the absence of cardiovascular disease in the Eskimos though the difference in this respect found by Rabinowitch between Eskimos living in their natural environment and those living south in the trading posts will appear significant enough to many who read the original paper but more important than this the findings are backed by the whole weight of the Darwinian principle For Man ranging he less evolved to cope with his natural food in the polar regions where natural fat consumption is very high than he is nearer the equator where natural fat consumption is very low Furthermore it is hoped to show later by using this very principle that high fat-consumption as the cause of coronary disease may easily be reconciled with instances such as this where a very high consumption of fat even containing fatty acids of similar saturation leads to no coronary disease at all

In connexion with this exculpation of all naturally occurring fats the principle now under consideration does not indicate any importance being attached to whether fats have saturated fatty acids or unsaturated fatty acids. The help afforded by the principle in this respect can be realized when for example the work of Boyne-Stewart and others[106] is considered and more recently that of Malmros and Wigand[107] on the effects of feeding different fats on the blood cholesterol level If the dietary fats were to be chosen for these effects there would ensue as *The Lancet*[20] has said a complete revolution in our present day dietary habits There would be a substitution of such fats as groundnut oil arachis oil seal oil and pilchard oil for such fats as dripping butter and the fat in eggs The principle does not indicate that the former fats are harmful (unless the tongue rejects them) but it does indicate unequivocally that the latter fats are not harmful and are indeed to be preferred to the former if the tongue indicates this We hope to be able to show later that even to sufferers from established coronary disease the natural law of adaptation has

practically better to offer them the suggestion of exemption for the first group of fats mentioned above, unless the patient has peculiar tastes.

It is true that in exculpating all naturally occurring fats eaten in accordance with the individual's appetite the principle does this most accurately for fats consumed in the raw state but we have already seen that Man is considerably adapted to the practice of cooking and it would therefore be illogical to suppose that he is less adapted to the cooking of fats than of other foodstuffs. Actually, it is known [20] that the chemical changes occurring in fat during ordinary frying are slight though fat used over and over again in deep frying shows some oxidation and some destruction of the essential fatty acids. It will be recalled too that well roasted fat on a joint is actually less sickly than slightly roasted fat.

So much for the naturally occurring fats. In the case of butter the application of the principle requires more care because, though the fat in milk is natural to the human body (notwithstanding the fact that it represents a luxury after the age of infancy) yet in the making of butter it has been unnaturally concentrated. It may be noted however on the one hand that in the making of butter the fat has not been appreciably altered structurally (the process consisting of steps even simpler than ordinary cooking) and on the other hand that the concentration achieved is as we shall see not so great as that which already exists in many natural fats such as the fat in meat which exists in almost pure form. This argument will be pursued shortly in comparing trends in fat and sugar consumption but meanwhile it may be said that the principle indicates no reason why the tongue should not be able to assess the correct amount of butter needed by the individual and therefore no reason why butter should of itself, play any part in an over consumption of fat and any resulting coronary disease.

Similarly in the case of margarine and kindred products the fat has not been raised to as high a level of concentration as the fat occurring in meat and so margarine is little more to be suspected than is butter. One says little more because in margarine the fats have been structurally altered in some extent by the process of hydrogenation. For this reason the principle does not exculpate margarine to the extent that it does butter. However the fact that coronary disease is commonest in those wealthy sections of the community that eat margarine the least and in many cases not at all and *per contra* is only moderately common in some races such as the Norwegians that eat margarine extensively appears to discount any great harm in hydrogenation from the point of view of coronary disease. Nevertheless it is a pity on general grounds that the people in this country do not eat vegetable oils that have not been structurally altered from their natural state as the Indians for example do in the case of olive oil.

Part V.—Application of the Natural Law of Adaptation to the Instinct of Appetite where Fats are Concerned

The first possible cause of any over-consumption of fat being thus excluded —i.e. alterations of the fats themselves from the natural state that would render

[redacted] is considered [redacted] fat-consumption which is not taken [redacted] statistical [redacted] consumption for countries as a whole. It is [redacted] greatest [redacted] that in civilized countries there is indeed [redacted] agency [redacted] *ails* and *arbitrary food mixtures* [redacted]

In arbitrary meals [redacted] his own choosing. Starting in the nursery where [redacted] meals [redacted] dictated by their parents progressing to boarding school [redacted] where routine meals are the order of the day continuing in business [redacted] professional life, where circumstances of anxiety and haste the midday lunch is often ill-desired whilst after work fatigue may similarly affect the desire for the evening meal and meals with friends where politeness takes [redacted] precedence to taste modern Man throughout his life is liable to partake of one long procession of these arbitrary meals. The natural law of adaptation positively precludes such natural states of mind as anxiety, haste, conscientiousness, ambition and the rest (that have existed as long as has Man himself but are often collected today as though they were new under the term 'stress') from ever directly causing organic disease of themselves but as a potent cause of taking arbitrary meals they may indeed be of importance.

Under the term arbitrary meals may be included other closely related meals eaten without reference to the appetite. These meals unlike the foregoing are not imposed on the individual but are taken voluntarily by him though for an ulterior motive quite unconnected with the appetite. Important examples include meals and parts of meals that are eaten because otherwise they would be wasted or because they have been paid for and if uneaten would appear to inflict on the individual a financial loss; meals eaten because it is considered they will do the individual good; meals eaten because of loneliness so as to obtain companionship or even because of sheer boredom; and meals eaten reflexly under the influence of alcohol.

In all these arbitrary meals the extremely important instinct of appetite is brushed aside. A man may not want what is available but would like some other type of food or he may not want any food at all at that particular time because for example his mind is preoccupied with the matter in hand or simply because he is very tired. But circumstances may dictate his eating the meal then and so he disregards his appetite and eats something he is not hungry for the natural law of adaptation is broken and the damage is done. This damage may include an over-consumption of fat.

The second form of unnatural interference with the exercise of the instinct of appetite concerns *arbitrary food mixtures* and because of their even greater interference they are probably even more important.

The most important of the arbitrary food mixtures are probably fried foods

fu these in order to eat an amount of meat fish eggs or even potat I flour that a man wants he is forced to eat an amount of fat that he may not want In short frying so intimately mingles proteins or carbohydrates with fat that a man is no longer able to express the ratio of his desires for these three food stuffs This explains the bad reputation that fried foods have with many people For the reason previously given this bad reputation is not due to the cooking of the fat it is due to fried foods being arbitrary food mixtures

Hardly less important than fried foods are processed foods as examples of arbitrary food mixtures These include many proprietary foods purporting to build up the individual s health such foods must always be anathema to those believing in natural principles And there are many other processed foods such as chocolate and ice cream Both these latter are often consumed for the sake of their sweetness i e for their sugar In Nature sugar is usually derived from a fruit occasionally from a vegetable and it is rare to find more than a trace of fat in either Yet in both chocolate and ice cream the majority of the calories are derived from fat Sometimes this particular dosage of fat may be suitable for the body but it would be a coincidence if it often were On a hot summer s day for example a man might like the sugar present in raw fruit but not seek to eat any fat at all he is given no option in an ice cream The same applies to many other processed foods

And even unprocessed foods may be arbitrary food mixtures Examples are cake where eggs and fats are compounded with flour without any reference to the desires for these substances in the individual who eats it pork and other meat pies and sandwiches where much pastry and bread may accompany little meat In these latter the wish to avoid waste previously referred to will probably lead to the consumption of the pastry and bread even if they are unwanted

In all arbitrary food mixtures the mixtures are designed to please the average individual It is therefore the Jack Sprats and by this term we mean all those individuals whose natural fat-consumption is below the average who will chiefly suffer an unnatural fat-consumption on account of them

That many natural foods are themselves mixtures of proteins fats and carbohydrates in no way detracts from what has been written of the dangers of arbitrary food mixtures The very fact that the former are natural indicates that Man is evolved to cope with these ratios and will experience no over consumption from eating such foods as long as he follows his appetite

To sum up so far therefore if an over-consumption of fat is related to the causation of coronary disease then applying the natural law of adaptation leads to the conclusion that there is only one cause for this over consumption and that it does not lie in the fats themselves but in their consumption in excess of the individual s appetite in short the cause is eating fats for which the individual is not hungry And the unnatural factors in the environment that lead him to do this are the arbitrary meals and arbitrary food mixtures of modern civilization

"Sophistication" in food consumption [illegible] alterations in food consumption which occur in civilized [illegible] good term since it does not separate out interference with [illegible] from interference with the instinct of appetite, a distinction which it is essential to grasp. As, however, in this paper the distinction is made abundantly clear, "sophistication" will be used as a convenient blanket term for both types of interference.

Part VI.—Trends in Actual Fat-Consumption

Reference will now be made to trends in actual fat-consumption—and to trends in sugar-consumption too, because there is an instructive difference between the two.

In the case of sugar there has been a very great increase in consumption. In 1815 the consumption in Great Britain was around 15 lb[22] per head per year. It reached 90 lb. by the beginning of the present century and, with two recessions during the two world wars, has reached 105 lb. today.

In the case of fat there are no early figures, and the consumption is best arrived at by a composite method. The latest figure (1956) is 54 lb. per head per year. Twenty years ago (1936)[23] it was virtually the same—53 lb. Earlier figures become increasingly difficult and would appear best interpreted with the memory of the worst of the rationed periods due to the last war still before us. The worst of those years was 1947, when the fat-consumption was 40 lb. per head per year, which resulted in widespread dissatisfaction. For 1913 the figures[24] appear to indicate a fat-consumption somewhat below this figure, which is rather surprising, because 1913 was a prosperous year for this country. It is interesting to note that in the United States in the forty years between 1910 and 1950 the contribution of fats to the total calories has been estimated to have increased by some 25 per cent.[25]

Earlier figures for fat consumption become increasingly difficult to interpret and soon disappear altogether, but the consumption even early in the last century, to correspond with the period given above for sugar, can never have fallen much below the 40 lb. mark. Not only the memories of the war years but also the teachings of physiologists indicate this. 40 lb. per year equals 1¾ oz. per day, and this figure (the equivalent of 50 grammes) is the absolute minimum allowed by physiologists to maintain health; increasing this figure for adult men, to compensate for the presence of old people and infants, still produces one uncomfortably close to the absolute minimum.

It will thus be seen that the increase in consumption of sugar has been approximately from 15 lb. to 105 lb.—600 per cent., whereas in the case of fat it has been approximately from 40 lb. to 54 lb.—33 per cent. (some would prefer a figure nearer 50 per cent.).

No doubt much of this big difference between sugar and fat consumption can be explained by different increases in availability (i.e. different falls in price), but it is difficult to believe that there is not also a more subtle reason

In [illegible] of sugar [illegible] [illegible] [illegible]. [illegible] for example contains 9.9 per cent of sugar, whereas the [illegible] in grocers' shops contains 99.9 per cent. The latter percentage is [illegible] in any natural fruits or vegetables, and as the human tongue is not evolved to cope with such concentrated sweetness it is easy to see how an over-consumption can readily occur from this cause. In the manufacture of butter and margarine, however, although a great increase in concentration is likewise achieved, the concentration does not reach that occurring naturally in meat. Thus butter and margarine both contain 85 per cent. fat, whereas the fat found in meat, such as beef or mutton suet, contains 99 per cent. fat. As the tongue is evolved to cope with pure fat, no over-consumption from this cause is to be expected with these foods.

In sum, therefore, these trends support the conclusion previously reached, although any over-consumption of sugar may be related to alteration from the natural state as well as to arbitrary meals and food mixtures, any over-consumption of fat is related only to the latter.

Part VII.—Emergence of a Key Conception—Unnatural Fat-Consumption as the Cause of Coronary Disease

It will now be seen that the extreme irregularity in the mortality from coronary disease in various countries, as quoted earlier from Morris, which is so disconcerting to those using purely investigational methods for establishing an over-consumption of fat as the cause of this disease, presents little difficulty to any availing themselves of the help provided by the natural law of adaptation. For the former concern themselves with total fat-consumption, whilst the latter concern themselves with unnatural fat-consumption. The former are disconcerted by extreme irregularity in the mortality from this disease where the total fat-consumption is much the same, where the latter expect it.

Thus, in the passage by Morris there is the sentence, "the great variation in mortality among Western countries have a similar high fat intake disposes of any story that total fat-consumption was the critical factor." But these variations would not dispose of any story that *unnatural* fat-consumption was the critical factor. On the contrary, such variations would be almost essential if it were the factor.

To show this it is necessary first to review the main circumstances which govern natural fat-consumption and then those which govern unnatural fat-consumption.

Natural fat-consumption is decided partly by climatic temperatures. Thus considerably more calories are needed in the north of Europe than in the south in order to maintain body heat, and so there will be a difference in natural fat-consumption in countries to correspond with this.

Natural fat-consumption is also decided by the output of physical work, more calories being needed for heavy manual labour than for clerical occupations, and there will be a difference in natural fat-consumption in communities to correspond with this too.

Natural fat consumption is also decided by racial considerations. Wealth, fat being a more expensive food than carbohydrate. Therefore, adequate wealth is necessary for fat consumption to rise to the optimal natural level.

Lastly, natural fat consumption is also decided by racial considerations. For example, in the polar regions Man can derive practically no calories from plant (carbohydrate) food and is therefore evolved to consume large quantities of fat. *Per contra*, at the equator he has access to an abundance of plant food and is therefore evolved to consume much less fat. This racial difference in fat consumption finds reflection even in Europe, where the northern races derive nearly double the proportion of their total calories from fat compared with the southern races (nearly 40 per cent. compared with 20 per cent. for the Spanish, Portuguese, and Italians).[131] As the proportions are so uniform in the northern and southern countries concerned, there is no reason to believe that this difference in ratio between the north and the south is due to economic influences.

If it is intended that not only the total number of calories, but also the proportion of calories derived from fat, is decided by climatic considerations, the climatic argument is not weakened. Because the human body in the course of evolutionary periods of time will be adapted just as surely to proportions dictated by this consideration as by the other.

This racial difference in fat-consumption finds a special application in countries such as Great Britain, where the population is of mixed descent, due to past invasions from the north and south, and such as the United States, where the population is descended even more heterogeneously. For it largely explains the Jack Sprats and their opposites that occur commonly in such countries today, the great importance of which types will be seen later.

It is clear that no comparison is feasible between communities that are very differently placed as regards these four main circumstances of climate, work, wealth, and race, for in that case the natural fat requirements will vary so much as to confuse the issue. This important point is overlooked by those who use purely investigational methods without the help of the Darwinian principle, and we find even Keys, for example, comparing Bantus with Danes. The human and racial circumstances alone indicate so great a difference in natural fat requirements as to make any comparison between these two races really impossible. The high Danish fat consumption might still be below their natural optimum, and the low Bantu fat consumption might still be above their natural optimum. In over sixty references consulted there was no mention of a natural amount of fat-consumption, and as for an unnatural amount there was not a hint of it.

The main circumstances governing unnatural fat consumption will now be reviewed.

Unnatural fat consumption is largely proportional to the prevalence of *industrialization*, through the effect of the latter on food sophistication. For towns with their numerous institutions, hotels, restaurants, and canteens expose

[illegible] [illegible] greater danger from arbitrary [illegible] country [illegible] likely to accent [illegible] his wife [illegible] in food. Towns expose [illegible] to a greater danger from arbitrary food mixtures too, because the greater [illegible] in food distribution leads to an increased consumption of purchased foods, which as previously noted are often examples of arbitrary food mixtures. Also some industrialized communities may have a predilection for certain special arbitrary food mixtures, such as fish and chips. Industrialization then, through augmenting food sophistication, is one of the biggest causes of unnatural fat consumption.

Next, with the same degree of food sophistication, unnatural fat consumption will be greater the more heterogeneous the descent of the population, owing to the increasing frequency of Jack Sprats amongst them—i.e. those individuals whose natural fat consumption is below average. The populations of Norway, Great Britain, New Zealand and the United States, for instance, form an ascending series from this point of view. An extreme example of this would be the unnatural fat consumption inflicted by food sophistication on the negroes in a city like Chicago. Negroes are by nature low fat consumers. Man near the equator deriving only about 10 per cent of his calories from fats, but in this case the negroes are placed amongst a population of whites who are by nature high fat-consumers. Food sophistication, based as already stated on average food tastes, will in a situation like this tend to inflict a disproportionate amount of unnatural fat consumption on the negroes. It is therefore not surprising that the mortality from coronary disease, negligible in the negroes in their native Africa, rises in Chicago to surpass that of the whites.

Lastly, a community's occupations are important in connection with unnatural fat-consumption. For, with the same degree of food sophistication, a reduction in physical work has the same effect as an increase in unnatural fat consumption, owing to the lesser utilization of the fat consumed. It has been shown[27] that the ordinary relationship between physical work and food requirements breaks down when physical work is reduced to a very low level, and although this is unlikely to be true under perfectly natural conditions, there appears to be no doubt that civilized communities engaged mainly in clerical tasks will suffer more from the effects of food sophistication than will those engaged in heavy manual labour. In this connexion it seems probable that if wealth has an unfavourable influence on unnatural fat-consumption, it is chiefly because it is conducive to less physical exertion.

From these reviews it is clear that the circumstances governing natural fat consumption directly affect total fat consumption, whereas the circumstances governing unnatural fat consumption, though they are very likely to alter total fat-consumption, need not do so, and mainly decide how that total is distributed amongst individuals. Two countries might therefore have identical total fat consumptions but quite different unnatural fat-consumptions. And that is why, as stated earlier, the great variations in coronary disease mortality among countries having a similar high fat intake, which prove so baffling to those

[illegible] and [illegible] much less difficulty in [illegible] [illegible] principle since the [illegible] is not total fat consumption but [illegible] fat consumption

Part VIII. Comparisons Based on the Key Conception of Unnatural Fat Consumption

Once countries and communities are compared from the point of view of unnatural fat consumption differences in coronary disease mortality become much more comprehensible. A good example is a comparison between the United Kingdom and Denmark where similar total fat-consumption is accompanied by similar natural fat requirements but where the mortality from coronary disease in the former country is half as much again as in the latter (e.g. 372 as against 260 per 100 000 males age 55–59)[230]. However as industrialized conditions are the rule in the United Kingdom but the exception in Denmark this big difference in mortality is to be expected if the disease is caused by unnatural fat-consumption. For the same total fat consumption will be much more unnaturally distributed in the former country than in the latter, as already explained. Finland however, is the exception in this respect as it has a higher mortality from coronary disease than the United Kingdom. Unfortunately though there appears to be plenty of food sophistication in that country no information appears to be available that would reveal how this is specially affecting unnatural fat consumption. Such information can only be obtained by careful future investigation.

Although unnatural fat consumption in a community does not necessarily cause a rise in total fat consumption it is very likely to do so. Therefore when a country such as New Zealand which climatically (being 15° F warmer) and even racially should have an appreciably lower fat-consumption than Norway has in actual practice an appreciably higher fat-consumption there exists good evidence that unnatural fat consumption is taking place. It is therefore not surprising that the coronary mortality is much higher in New Zealand (492 against 210 per 100 000 males aged 55–59)[231]. The racial heterogeneity factor in New Zealand is much greater than in Norway but very careful investigation into the food habits of both countries would be necessary to establish what differences in food sophistication exist.

In all these comparisons however those looking for unnatural fat consumption as the explanation of variations in coronary disease mortality retain their perspective by keeping in mind how small these variations are when contrasted with the difference in mortality that exists between all civilized races on the one hand and those uncivilized on the other in which latter the mortality figures likely to be almost nil.

Next just as when countries and communities are compared so also when occupations are compared from the point of view of unnatural fat consumption differences in coronary disease mortality become much more comprehensible. Thus it is not surprising that professional men have nearly double the mortality

[illegible] partake of arbitrary meals which [illegible] fat-consumption but their relative lack [illegible] this unnatural consumption. Similarly [illegible] the more irregular demands made upon [illegible] more difficult the planning of their lives [illegible] arbitrary meals.

Reference must now be made to an earlier [illegible] the passage by Morris. But it was not possible in time series or other [illegible] of the mortality from coronary heart disease with that was known of trends in fat consumption.

In time series—that is over the last half or even quarter of a century—it is indeed difficult to correlate the mortality from this disease with trends in total fat-consumption which as already indicated in this country show only a moderate increase since the turn of the century. But if it is difficult to correlate the mortality with trends in total fat consumption it is not difficult to correlate it with trends in unnatural fat consumption.

Coronary disease is one that usually takes a long time to reach the stage where it causes symptoms. As the causative factors may operate any time after a child first begins to eat an adult type of food and as the disease reveals itself with increasing frequency after the age of 40 it is no exaggeration to say that 40 to 60 years may elapse before the stage of symptoms let alone a fatal issue is reached. Therefore the increasing number of cases occurring at recent years does not imply any recent increase in the causative factors but rather an increase that may have started forty or more years ago though as stated earlier in this paper the lowered mortality curves in rationed countries during the last war appear to indicate some transient aggravation or other acute cause as regards the thrombosis element in this disease.

During this long period the population in the United Kingdom has increased steadily from 38 millions in 1901 to 50 millions in 1951 and industrial life has increased at the expense of agricultural life—and industrialization is already stated has a decided effect on the final sophistication that determines unnatural fat consumption. In addition food processing has increased during this period quite apart from increased industrialization. Thus ice-cream previously alluded to shows the following increased consumption in the United Kingdom in thousands of gallons [18]

1920	1930	1938	1951
870	7 890	35 50	9 [illegible]

It is therefore not difficult in time series to correlate the mortality from coronary disease with unnatural fat consumption. And the recently stated [illegible] correlation between the mortality from this disease and the sales of television

[illegible] this also becomes comprehensible on this view since [illegible] by another effect of undernutrition.

To sum up further: through all these comparisons unnatural fat consumption runs like a golden thread as the essential cause of coronary disease.

Part IX.—Distinction Between Singleness of Cause and Multiplicity of Modifying Factors

It is important at this stage to distinguish between a single cause and multiple modifying factors which latter cannot operate if the single cause is removed.

Thus the fact that coronary disease has a marked difference in incidence in the two sexes should not be disconcerting to those believing that the single cause is an over-consumption of fat. There are many differences in the biological composition of the two sexes so that even diseases which appear to depend on no external cause such as Hodgkin's disease have a different sex incidence. But the lives of men and women are so different that in the case of coronary disease it is quite possible that a different degree of an external cause such as unnatural fat consumption may also be operating: one has only to consider the different food habits in the two sexes to see this: women being much less away from home.

Similarly other factors such as a raised blood pressure including that due to hypertonic [illegible] can be understood as aggravating the effects of disease in the coronary arteries without in any sense being the cause of that disease.

Similarly too the fact that chronic alcoholics in this country get less coronary disease[125] presents little difficulty. It is known not only that these individuals get a proportion of their calorie requirements from alcohol itself and [illegible] therefore need to consume less fat but also that they frequently develop a chronic dyspepsia that gives them a particular distaste for fat.

We have already referred to the effects of physical exertion on fat consumption so that it is comprehensible that coronary disease is less prevalent in those who experience much of the former.

An over consumption of fat might therefore be the single cause of coronary disease and yet produce different effects in men and women, in those with high blood pressure and those with a normal blood pressure, in smokers and non-smokers, in alcoholics and non-alcoholics, but if it were the single cause its removal would prevent the disease in all of them.

It may be added here as a closely related point that the natural law of adaptation indicates quite unequivocally that the cause of coronary disease can never be in any errors of the arterial walls as Duguid and Robertson[126] have recently suggested may occur from natural growth processes. The sites of greatest stress may well decide the patchy distribution of the naked eye effects of atheromatous arterial disease just as they decide the aneurysmal effects of syphilitic arterial disease, but it must be assumed that the former are just as much due to a preventable disease as the latter. To assume the opposite is not only to obstruct even the Darwinian principle, but to hesitate over the all important [illegible] of precaution.

[redacted] constitutes the natural ageing process in the [redacted] Consideration of this in other parts of the body leads to the rejection of any process that is not a gradual shrinkage in size of parenchymatous cells, rendering more obvious the fibrous tissue stroma between them the so called senile atrophy To this may be added a fine deposition of calcium between the cells (so that Mönckeberg's arterial degeneration may possibly qualify as a natural ageing process) In the case of the arteries such a process leads to the arterial walls becoming thinner and the lumen therefore wider (senile ectasia)

It is not possible therefore to accept the idea that atheroma (or hypertension) forms any part of the natural ageing process To be sure such progressive diseases must become more pronounced the older the patient becomes but in ideal health there should be no trace of them and in fact many very old people do die with the same smooth arterial linings (and the same low blood pressure) of their youth Cruickshank [98] found only minimal arteriosclerosis in not less than one third of people dying over the age of 80 To accept therefore what Paul Wood [99] calls the sterile doctrine that atherosclerosis is an inevitable consequence of growing old would entail again hesitating over the bright goal of prevention

In the coronary disease that occurs in diabetes the argument is rather different Here a high blood cholesterol from disorganized fat metabolism acts like the high blood cholesterol due to an over consumption of fat This should in theory lead to the conclusion that the most direct single cause of coronary disease is a high blood cholesterol But from the practical point of view—that of prevention—it is preferable to concentrate on the less immediate cause over consumption of fat and the still less immediate cause arbitrary meals and arbitrary food mixtures

When Morris therefore says that an appeal to epidemiology refuses to confirm hypotheses of a single or simple dietary aetiology for ischaemic heart disease this cannot be said to apply to the single cause elucidated with the help of the Darwinian principle—the unnatural fat-consumption This single cause not only appears to be the only one that fits all the facts but in addition has the great advantage of simplicity Moreover it suggests further lines of constructive research such as the correlation statistically of the incidence of coronary disease in populations communities and individuals and in followers of different occupations with the degrees of food sophistication in which they are exposed in the case of individuals this would take into consideration whether their natural tendency was to consume much or little fat

Part X.—The Prevention and Arrest of Coronary Disease

If the natural law of adaptation is of help in elucidating the cause of coronary disease it is of still greater help in elucidating the prevention and indicates very clearly what should be done It is desirable first to examine what this principle indicates over the consumption of foods in general and then—since

[illegible] with the subject in outline.

Applicat[illegible] The principl[illegible] foods and these two rules [illegible] The two rules are (1) [illegible] (which in the [illegible] civilized Man [illegible] and (2) [illegible] foods in strict proportion to the appetite (which [illegible] food only if made in accordance with personal tastes).

In short, **natural foods, individually desired.**

With regard to the first rule, this leads mainly to avoiding two groups of food—white flour and commercial sugar, and all the products made from them. These two groups of food are no longer remotely near their natural state, and those who subscribe to natural principles cannot safely have anything to do with either of them. These individuals will also be on guard against such manoeuvres as the taking of natural flour, the removal of the bran, the addition of certain vitamins and salts, and then the claiming of the result being virtually as good as the natural product. The scientifically minded, trying in this way to be clever at Nature's expense, will nearly always come to grief—in this particular case the removal of the fibre will in the course of two or more decades from the age of childhood (not just one year) probably cost them their teeth through caries, and especially pyorrhoea, and inflict on them the painful experiences of haemorrhoids and other related conditions of venous stasis. It may be added that refined sugar constitutes a much greater threat to health than does refined flour, as it represents a much greater deviation from the natural state, but this matter cannot be pursued here.

The first rule, however, leads to the exclusion of very few other classes of food, all meat, poultry, fish, eggs, *fats*, vegetables, fruits and unrefined cereals being freely allowed. An obvious exception is alcoholic drinks, especially where malt sugar is present, as in the case of beer and stout, though when the alcoholic drink is near the natural raw material, as in the case of light wines, the harmfulness is clearly not great. A not so obvious exception is honey, and certain fruits such as dates, which contain 76 per cent. and 64 per cent. sugar respectively. Honey under natural conditions would be available only in minute quantities, and dates would in other races not be available at all; special care is therefore indicated with very concentrated foods like these. Such examples have been included here only as brief exercises in the careful use of the first rule.

With regard to the second rule, this comes down to avoiding the arbitrary meals and food mixtures described earlier in this paper. In connexion with arbitrary meals, it may be noted that it is essential that a man should decide *beforehand* what it is that he really wishes to eat. If he starts to eat

something he does not really wish to eat a spu[illegible] reflex u[illegible] Error may supervene in this case, the instinct of appetite has not been cultivated naturally and may not be reliable Similarly the insane may indicate that a man should go on eating the same type of food throughout the meal and not change to a different course

If circumstances prevent one from eating what one wishes it is better to defer the meal until this becomes possible later Fraudin will seldom cause from taking this step as in civilized conditions the danger has nearly always in eating too much almost never in eating too little

Finally it is clear that the more the first rule is departed from the more the second rule should be adhered to For the foods disallowed by the first rule are those that have been greatly altered from their natural state and this alteration nearly always involves concentration And the more concentrated the food the more enzymos becomes the importance of meticulously matching it with the appetite It is possible that with great attention to the second rule the first rule may sometimes be broken almost with impunity Experimental is foreachmed There is a world of difference between the ignorant massive consumption of the greatly concentrated materials sold in confectionery shops and the very occasional taking of a little sugar in tea or with raw and stewed fruit or in the form of say a little bitter marmalade with bread or in the form of some-honoured flavourers like apple sauce mint sauce and cranberry jelly with certain meats Such cautious departures from the first rule though not to be recommended are at least to be understood and can cause only the minimum of harm

Application of the Principle to the Consumption of Fats in Particular — The principle necessarily indicates exactly the same two rules in the eating of fats as in the eating of all other foods but since in modern civilization fats are not subjected to concentration as previously explained the first rule has very little application nearly all types of fat being allowed (margarine and kindred products being slightly shaded in this respect) and it is the second rule that becomes of dominant importance

In this respect the danger of over consumption of fats may be even more in arbitrary food mixtures than in arbitrary meals and such mixtures should be approached with the greatest caution Thus in case of dishes fried in fat all batter should not be eaten or fried foods should be avoided altogether Many processed foods such as the chocolate and ice-cream already referred to are very rich in fat and are nearly always best avoided completely Each individual food mixtures prepared in the home should be looked at askance For example one or more boiled eggs bread butter and tea to which sugar may ordinarily be added where all the separate components of the meal are combined in accordance with personal taste are preferable to a jam omelette where the mixture is arbitrarily blended by the cook At the same time personal judgment is clearly permissible for example if a plain omelette is made with butter and yet an individual wishes to eat it with bread and more butter clearly there is no

excess of fat in the omelette as fat is that individual [illegible] need not be avoided Other examples of arbitrary food mixtures prepared in the home are cakes and pastries and certain puddings such as the batter pudding commonly eaten with roast beef

The application of the natural law of adaptation to the question of food consumption including fat consumption is therefore seen to indicate very clearly which foods should be eaten and which should not be eaten in order to prevent disease including coronary disease. It will be noted that changes indicated in any existing diet are invariably in the direction of simplification The simplification in theory is matched by simplification in practice a great deal of trouble being saved in the kitchen Moreover there is little loss of pleasantness because no basic foods are ever forbidden and no natural desire over food is ever thwarted The changes indicated however do involve some extra expense because the handling charges of foods in their natural state are often greater than those of processed foods and so the former often cost more

The writer hopes to show elsewhere in due course that the above two rules which it cannot be emphasized too strongly are dictated solely by the Darwinian principle and not by any medical opinion whatsoever cover all dietetic requirements both in health and disease and are of supreme importance in avoiding the numerous diseases that appear to be related solely to the food sophistication of modern civilization Chiefly because of clinical consideration, the writer himself has been converted to the view that an over consumption of fat is responsible for coronary disease but if fat consumption were eventually excluded altogether from the aetiology of this disease it would make no difference to the two rules deduced here since these rules necessarily apply to all foods at all times In any case, as regards coronary disease these two rules apply to sugar consumption as well as to fat-consumption otherwise it becomes impossible to prevent the numerous cases of coronary disease secondary to diabetes if as the author hopes to demonstrate elsewhere this disease is largely related to the concentration of sugar by refining processes and to the great increase in consumption that stems from it

But all this concerns what to do and knowing what to do and having the determination to carry it out are two very different things An individual will find that modern life does not make it very easy for him when away from his own home to avoid an unnatural consumption of fats and many other types of food nor does it make it particularly cheap for him Average intelligence will enable him to know from the natural law of adaptation what to do but it will require more than average determination to carry it out The basis of this determination must consist of complete confidence in the logic and safety of the two rules deduced above and of a very real reverence for the human body With such determination there can be no doubt that these two rules can be put into practice and the certain amount of trouble entailed when away from home will be accepted without demur

Similarly our profession will not find it any easier to eradicate coronary

[illegible] and many other diseases that stigmatize our modern civilization. After many thousands of medical articles and discussions on peptic ulcer, for example, extending over half a century the disease appears to be commoner than ever and more human stomachs seem to be removed in operating theatres and thrown away every year. And much the same is true of the others. It is submitted that a different approach should be made to these diseases based on fundamental laws and an endeavour has been made in this paper to outline such an approach in the case of coronary disease

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FISH JUICE
ITS PRACTICAL VALUE FOR THE DEHYDRATED CASTAWAY

BY

Professor C. G. HUNTER, *D.S.C.*

The plight of the castaway at sea has always captured the imagination. Exposed to heat and cold, depending on food and water rations for basic necessities and fighting the elements, the hapless sea or air mariner precipitated suddenly into an alien medium requires *fundamental indoctrination* great courage and physical strength to survive. McCance *et al* (1956) analysing the survivors' accounts of World War II sinkings have shown that the chance of eventual survival is increased 30 per cent by gaining the shelter of a life raft. Then the survivor faces two acute hazards: loss of *body heat* and *dehydration*. In their analysis, lack of fresh water and its ancillary, the drinking of sea water, was the third commonest cause for loss of life in ocean shipwreck. It would be thought that lack of water would cause death predominantly in tropical waters but it is remarkable how many deaths took place in the temperate zones from the lack of fresh water and the drinking of sea water.

The advent of the self-inflatable life raft has already proven its worth in supporting life but the provision of this type of life-saving equipment and the planned survival period require a minimum supply of water and food in the provision pack else the survivor carrying capacity will be reduced. The water ration of this pack is but a *temporary expedient* and survivors should endeavour to supplement their stored water from natural sources. Such sources are rain, fog, dew and perhaps sea ice. Even the salvage of body water from losses in the expired air and insensible perspiration has been contemplated.

With so much water about him it is no wonder that the question of sea water drinking has repeatedly been raised and it is hoped that Hervey's (1957) most recent condemnation of this practice will be heeded by all who sail the seas. Not until the dissolved salts are removed can sea water benefit the dehydrating castaway. Practical methods for desalination with the aid of heat, solar energy and ionic exchange resins are available but they are not the subject of this article.

However, the sea supports a vast multitude of living creatures with body fluid concentrations but a little higher than that of man. In the case of fish

mechanisms have been developed to exercise the excess salt taken in feeding through the gills and sea birds utilize the nasal membrane for this purpose. The sea mammal on the contrary endures the injection of the sea-water gulped with its food from the mouth and lives on the water of body fluids the preformed water and the water of oxidation of fish flesh. So it is not surprising that man has considered emulating the sea mammal and has tested fat, the body water of fish as a possible natural source from which to supplement his water ration. Over the centuries boatsay accounts have not infrequently been received of fresh water biting and chewing fish flesh and sucking its juices. But it was Bombard's (1954) courageous ocean crossings utilizing fish flesh and its juices as one source of water that reawakened scientific interest. Empirical and experimental observations by Winkler *et al.* (1944) had shown little or no benefit from the consumption of whole fish in the condition of hypertonic dehydration being aggravated because the metabolites of the fish protein metabolism and the electrolytes of fish muscle require more water for renal excretion than there is available in the fish muscle. But this water must be taken from the already entrained body water reserve making worse the total water deficit. However on the average some 60–75 per cent of the weight of fish muscle is water and were this extractable another possible natural source of water would be available for the castaway.

This article discusses how much of the body water of fish may be released by practical means and the benefit or harm that would follow the consumption of this water since the water of the fish flesh is always accompanied by organic compounds and electrolytes that require body water for excretion.

In practice the problem presented is a simple one. First of all is it worth the castaway's effort to catch fish to extract the fish juice? The important question here is the *quantity of juice extractable*. If a good quantity is available then some consideration might be given to the incorporation of a device in a provision pack to procure the juice. Secondly if juices are obtained from fish in reasonable quantity should the dehydrated subject drink any? To answer this we must know the *composition of fish juice and the impact of such a juice on the dehydrated state*. One question is a corollary to the other and this article will discuss the production and yield of fish juice and then the effect of drinking such while suffering from dehydration.

Part I

Production and Yield of Fish Juice

A rubber life raft cannot be encumbered with unwieldy heavy equipment and fish juice extraction must be simple expedient and require little muscular effort. Chewing sucking and biting raw fish are an obvious thought but the author and others had no sensation of expulsion of water or juice after chewing fresh cod fish fillets. In fact the expectorated pulpaceous mass that remained in the mouth after ten minutes chewing weighed more than the original! Some type

Of compression extraction has been used in most experimental investigations and commercial undertakings using various types of manual hydraulic and mechanical presses (Shewin 1954 Bombard 1954 Hunter and Hughes 1954 and Beharrel 1955) Bombard (1954) also suggested compression by torsion in sail cloth the large pieces of fish compressed in this fashion exuding juices that dripped into a collecting vessel * The yields of fish juice from different fish with different methods is shown in Table I

Table 1.—The Yield of Fish Juice in c.c or gm/kg of Fish Flesh Obtained by Various Investigators by Means of Compression Extraction

Method	*Fish*	*Yield*	*Authority*
Pressure (not stated)	Sea Bass	50 cc /kg	Butler (1943)
Pressure (oil press)	Cod fish	100–200 gm /kg	Notevarp (1942)
Pressure (meat press)	Not stated	217–380 gm /kg	Bombard (1954)
	Tunny	400 gm /kg	
	Catfish	375 gm /kg	
Torsion (in linen bag)	Not stated	200–250 gm /kg	
Pressure (hand press)	,	240 gm /kg	McEvoy (1955)
Twisting	,	120 gm /kg	
Pressure (specially constructed press)	Mackerel	278 gm /kg	Hunter and Hughes (1954)
Pressure (specially constructed press)	Codfish	400 gm /kg	Hunter Hughes (1954)
Pressure and Heat Commercial press	Herring	600 gm /kg	Beharrel (1955)

As yields of 250 ml of fish juice or more per kilogram of fish muscle are obtainable with compression extraction a practical quantity is procurable It would certainly be better than nothing at all and a castaway's life may be prolonged by extracting fish juice To extract the minimum daily fluid requirement (*vide* Part III) some 3–4 kilograms of fish muscle would need processing daily Could this amount of fish be caught Certainly fish appear plentiful in certain oceans since Bombard (1954) and Evans (1955) describing their experiences point out that pelagic fish were usually in company with their rafts during their voyage No difficulty presented in procuring fish for juice extraction and other purposes during their voyages

The maximum quantity of fish juice extractable with compression methods is in the vicinity of 400 gm /kg of fish muscle owing to the remainder of the water being bound in the protein Hunter and Hughes (1954) in their study have shown that for any given press the yield is dependent on the weight of the sample the pressure applied the state of fish muscle and to a less extent the species Any device built to extract the maximum available quantity must be so constructed that fillets of fish muscle are subjected to considerable pressure while being held in position to prevent extrusion of the muscle

* Personal experiments on these lines have proved completely futile

[illegible] II

The [illegible] of Fish J[illegible]

Should a thirsting [illegible] [illegible] his life? Water is his prime requ[illegible] [illegible] [illegible] balance if the organic material supplied [illegible] [illegible] [illegible] of the fish juice were high [illegible] [illegible] than the human organism needs [illegible] [illegible] and fish juice then some water is [illegible] [illegible] of body [illegible] the unavoidable loss through [illegible] respiration [illegible] Knowledge of the composition of the juice obtained from fish flesh and the physiological limitation will allow an answer to the [illegible] of the fish juice as a thirst-slaker

Bombard (1954) used the [illegible] of shipwrecked mariners to estimate the value of fish juice and remarked it would be a valuable source of food and fluid for *his needs* on his crossings He thought that if he could obtain 1 kilograms of fish juice daily all his body water needs would be supplied but in practice he might only collect some 750–900 grammes daily which would contribute a little of his daily requirement if some sea water were also drunk Bombard expected fish juice to have the average composition listed in Table II

TABLE II — AVERAGE COMPOSITION OF FISH JUICE (BOMBARD 1954)

Solids	40·0–67·5 gm/kg of juice
Nitrogen	5·9 9·6
Water	922·9 [illegible]

TABLE III — AVERAGE COMPOSITION FOR FATTY AND NON-FATTY FISH JUICES EXPRESSED AT CONCENTRATIONS IN 1 PRESS (HUNTER AND HUGHES 1954)

	Fatty juice	*Non-fatty juice*
Water	[illegible] 8·0 gm/kg	920·0–940 gm/kg
Solids	50 100	60–80
Ash	13·0	8·0 10·0
Fat	30 150	Very little
		2·0 3·0
Nitrogen	10·0 17·0	8·0 11·0
Protein nitrogen	5·0 8·0	6·0–7·0
Total electrolytes	350 400 m-eq/litre	300 420 m-eq/litre
Sodium	40 50	50–60
Potassium	80 100	100 130
Chloride	30 50	40–60
Phosphate (as P)	100 120	80 110
Total solutes		400–450 m-osmol/litre

Analyses had been made earlier by [illegible] U.S. observers and Butler (1943) considered that the nitrogen, potassium and phosphate content of the fish juice collected from a sea bass were too high to make it a suitable source of water for a thirsty castaway

More accurate analyses have been made by Hunter and Hughes (1954) These authors investigated the juices extracted from the fillets of freshly caught

fish by compression and incisional hanging (the latter not a practical source of juice as regards quantity) and found that juices may be divided into two types

(1) A fatty juice—from pelagic or surface-living deep ocean fish

(2) A non fatty juice—from demersal or bottom living shallow ocean fish

In appearance the former is a reddish white-yellow oily cream and the latter a thin milky fluid If most of the coarser pieces of fish meat are removed by simple means the composition of juice remaining may be determined (Table III)

It is apparent that the main difference between these juices is in the fat content there being an inverse relationship between fat and water If the composition of fish flesh is known then with the aid of such analysis estimates of the composition of the juice extractable from it by compression methods may be made For both types of juice on average it is found that the fraction of *water* extracted is 1 3 of nitrogen 1/7 of electrolyte content 1/5-1/4, and of fat 1/4-1/3 of the content of the fish flesh *The physiological problem is whether a castaway will benefit through the consumption of a third of the water of fish flesh if he must accept a seventh of the nitrogen, and at the worst, a third of the fat and a quarter of the electrolytes as well*

Fish juice is derived from the intracellular and extracellular fluids of fish and it has a nitrogen content similar to blood plasma but the electrolyte content is somewhat higher the phosphate and potassium content is raised whilst the sodium and chloride content is lower than in body fluids during life A theoretical assessment is possible to judge the value of fish juice in dehydration but direct experimental studies on thirsting man are also needed

(The juice obtainable from the shark family is definitely of no benefit because the solute concentration is too high 1,345 m osm/litre—this being due to the physiological uraemia of chondrichnich fishes *As with sea water consumption no thirsty survivor should drink shark flesh juices)*

A digression to discuss the physiology of dehydration is necessary if the value of fish juice is to be estimated Water loss continues unabated at some 1 300 ml a day in a fasting adult man deprived of water The water is lost more rapidly than body solids so that the solid content of the body rises and this is reflected in the concentration of solutes in body fluids The rate of water loss is all important a slow loss being better tolerated than a rapid one Death may occur from cardiovascular derangement with a loss of 11 per cent of body weight if the loss is rapid in high external temperatures but where the loss is slower, some 20–25 per cent body weight may be lost before death from an explosive rise of the intracellular tonicity The survivor must make every endeavour to reduce water losses to a minimum Losses of water through the skin and respiratory tract are kept down by defined methods of body cooling and reduction of muscular activity The *renal loss* must also be reduced and the only way to do this is by *lowering the quantity of metabolites submitted to the kidney for excretion* This quantity the renal solute load amounts to some

800 milliosmoles a day. Figure 1 demonstrates the daily volume of urine required to handle the load in normal intakes in fasting and after the consumption of 100 grammes of carbohydrate a day.

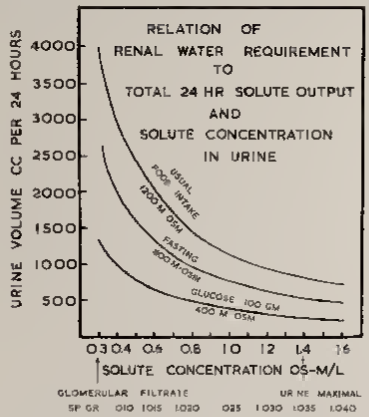

FIG. 1.—Data giving the relationship of the twenty four hour renal water requirement to solute load in subjects on normal food intakes fasting, and fasting with 100 grammes of glucose daily (Gamble 1947).

It is obvious that a kidney of good function il capacity is able to concentrate urine to nearly 1.4 osmoles/litre, and the urine volume in the fasting subject in this concentration amounts to some 500–600 ml. daily. With a carbohydrate intake Gamble (1947) and Hervey and McClance (1952) were able to reduce this to 380 ml. daily, so sparing 200 ml. of water for other requirements.

Since the body fluids of thirsting fasting subjects are becoming more concentrated it would be an unwise act to add more solutes to the body fluids. The kidney would endeavour to remove the added solutes from the body fluids and could only do this with the aid of body water already in short supply; nor only is this so but an accepted state, *osmotic diuresis in hydropaenia*, eventuates, the water requirement for the solute load excreted becoming relatively greater.

and more water being [illegible] from the body water reserves. Any dietary intake particularly of protein [illegible] adding nitrogenous solutes to the body increases the renal solute load and demand for water to excrete it.

Fish juice contains nitrogenous substances that on metabolism will be excreted in the form of urea and other nitrogenous urinary substances and electrolytes. If the total amount of these is known being expressed as osmoles per litre of fish juice an estimate of the urine volume to excrete the renal daily load may be made. Further if the daily urine volume in the fasting state is subtracted from the total urine volume of the urine volume required for the additional renal solute is made. The difference between this and the water in a litre of fish juice would be the amount available for the losses by other routes if a litre of juice were consumed.

In this way Hervey (1954) made several calculations of the value of fish juice. He said that a litre of *fat free* body juice from a pelagic fish—the one most likely to be caught by a survival kit—would increase the daily urine volume by 680–1 120 ml in a fasting healthy man as some 720–1 090 m osmoles of solutes being added to the body (360 370 m osmoles from electrolytes and 360–720 m osmoles from the nitrogen intake if expressed in the form of urea). The water intake in the fish juice would be 760–800 ml so that the balance of free water reabsorbed in the renal tubules may lie between +170 ml and −400 ml. A litre of pelagic *fat free* fish juice drunk at its best value would give approximately 400 ml to the body but at its worst absorb 400 ml from the body to excrete the urinary metabolites. If the fatty fish juice composition is expressed per litre of the remaining juice as in Table III then the water value of this type of juice may be higher because the fat may on oxidation yield water equal in its own content. However the fat in the juice would only spare some of the body fat directly being oxidized in the fasting state and nothing may be gained by reasoning in this fashion.

With the juice of demersal fish similar calculations showed that the consumption of one litre of fish juice from codfish fillets would add 500 ml at the best and 150 ml at the worst to the body water content. Theoretically then the consumption of codfish fillet juice would be of benefit in thirsting fasting subjects but the fatty juice extracted from a pelagic fish may be of little benefit and actually harmful. It must be emphasized however that the body fat content of pelagic fish is seasonal depending on the abundance of food and at certain times of the year the fat content may fall considerably. The water content of the juice expressed from these fish would be much higher.

Wolf (1956) also calculated the value of fish juice in dehydration and said demersal fish juice would benefit thirsting castaways and the author using the composition of codfish fillet juice used in the experimental studies contended that some ¼–⅓ of the water in the juice would be free water and reabsorbed and utilized for the other routes of water loss.

A less likely method of dealing with the nitrogen moiety of fish juice would be by rejection of the gut akin to the selective absorption that Wolf (1956) states

[illegible] may occur in some [illegible] mammals. It seems much more likely that [illegible] would be made by the stomach, owing to the nauseating [illegible] content of some of the fatty juices.

Hunter (1955) carried out animal and human studies [illegible] calculations. Juice extracted from fresh codfish fillets was [illegible] to rats, mice, and rabbits and supplemented a small ration [illegible] subjects. The results from the animal data showed that rats [illegible] maintain life indefinitely by drinking this juice in lieu of water. [illegible] from rabbit studies were less conclusive. They did however demonstrate [illegible] there is little to be said for the idea of selective absorption of [illegible] nitrogen utilization in these animals remaining high during the exhibition of the juice.

The data from the human studies agreed with the calculated [illegible] demersal fish juice—a litre of cod fish fillet juice if drunk adding nearly a [illegible] to the body water reserves.

The results were derived from a carefully planned cross-over study [illegible] using 8 subjects on two fasting regimes one with a small daily ration of [illegible] 280 ml and the other with the addition of nearly a litre of codfish juice [illegible] this. When the third day results involving loss of body weight, water [illegible] urine, lungs and expired air were compared it was found that the *subjects on the supplemented ration were much less affected by dehydration and this was not due to the dilution of toxins raising the concentration of the body fluid.*

Subjectively little difference existed between the two groups deliberately not being either rapidly produced or severe enough to cause [illegible] exhaustion. At the end of the water-alone regime all subjects were [illegible] by approximately half a pint of the fish juice and enjoyed [illegible] the [illegible] sense of relief. *All agreed that they felt this drink could be [illegible] and their thirst although not a prominent symptom could be [illegible]*

The *average body weight* lost over a short period of thirsting in [illegible] is a good measure of dehydration. Over the whole three days the subjects [illegible] the fish juice supplementation lost *1·17 kg. body weight* and on the third [illegible] 0·45 kg. less weight and this in spite of an increase in insensible loss. [illegible] ing of weight was highly significant.

The mean urine excretion increased by 400 ml on the third day in the fish juice group and the concentration fell 150 m osmols/litre (fig. 2). *But since only 870–938 grammes of water were drunk in the fish juice a gain of 450 grammes of water would be expected.*

The *mean third day water balance* of the subjects on the two rations is shown in fig. 3 and compared with a thirsting fasting man and a fasting man allowed water *ad libitum*. It is apparent that an intake of 280 ml a day reduces the daily water deficit of a thirsting fasting man by 100 ml. The addition of 972 ml of water in the fish juice reduced the daily water deficit to 336 ml—a figure which is comparable with that of the fasting subject. In the case of the [illegible] however there is no increase of body fluid concentration and antidiuresis is not

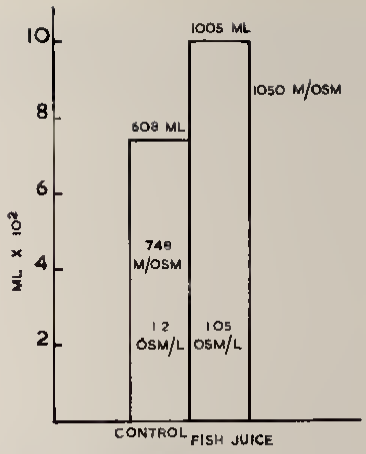

FIG. 2.—The mean results of water, electrolyte and solute load of 8 men on the third day of dehydration on (1) control ration of 250 ml. of water and the ration supplemented with nearly 1 litre of fish juice. (Hunter 1955)

parating the water deficit being associated with loss of tissue in catabolism. Some error may exist in the method of calculating the water balance in the present study owing to the quantity of water yielded by oxidation of body tissues not being estimated directly, and it may be too high—this error would however increase the water deficit both in the control and experimental groups and any error would not affect the conclusion.

The body fluids become concentrated in dehydration and when the mean values for blood constituents were analysed it was found that *no significant difference* existed in urea, protein, sodium, potassium and chloride levels but the haematocrit value was higher in the fish juice group. No explanation was found to account for this.

The mean electrolyte balance on the third day in the two regimes gave some cause for optimism since the concentration of body fluids with the fish juice

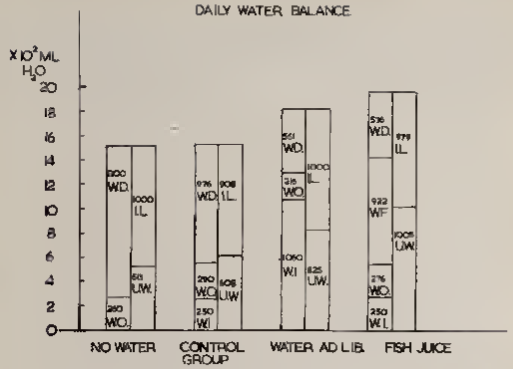

Fig. 3.—The daily water balance in dehydrated fasting men with no water (Gamble 1947) a small water ration (Hunter 1955) water *ad libitum* (Gamble 1947) and fish juice supplementation of the water ration (Hunter 1955)

Where I.L. = insensible loss
W.I. = Water intake
W.D. = deficit
W.O. = of excretion
W.F. = of fish juice
W.W. = of urine

supplement was raised by 2·0 meq./litre (0·2 meq./litre less than the value in the control group) the fluid retained being equal to a fluid 0·82 isotonic. It is apparent therefore, that the metabolites of fish juice did not increase the body fluid concentration more than in the subjects on basal water.

The fish juice supplement in the human trials benefited the water balance by reducing the drain of water in the unavoidable losses. With codfish fillet juice the solute concentration is not too high to be deleterious and although osmotic diuresis followed the urine concentration did not fall much below its maximum value. This urine water loss of 130 ml. a day was offset by the gain of free water.

Fig. 4 compares the daily urine volume and solute load on several different regimes with the maximal concentration achieved at low urine flows. It is apparent that the increased urine excretion associated with the renal solute load of this study has lowered the urine concentration which physiologically is to be guarded against. A greater intake of fish juice would lower still further the

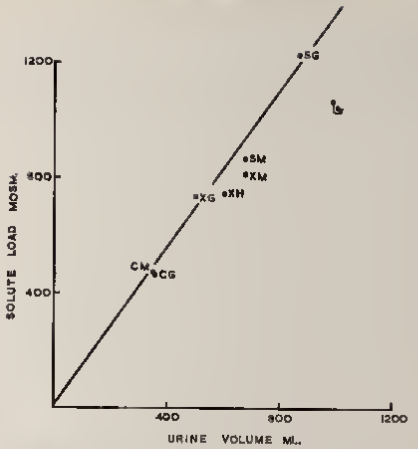

Fig. 4.—The relationship between urine volume and solute load in dehydrated fish, rehydrated in various fluid intakes

CM	100 gm Glucose	(Harvey and McCance 1957)
	750 ml Water daily	
CG	100 gm Glucose (water restricted)	(Gamble 1947)
XM	3 l ml Water daily	(Harvey and McCance 1952)
XG	No water	(Gamble 1947)
XH	250 ml Water daily	(Hunter 1955)
SM	350 ml of water +	(Harvey and McCance 1952)
	180 ml sea water	
SG	500 Sea water	(Gamble 1947)
	250 ml of water +	
	970 ml of fish juice	(Hunter 1955)

The line representing the relation to normally concentrated urine.

urine concentration and it would be theoretically possible to reach an intake from which no water would be gained at all. It is interesting to notice that Gamble's (1947) sea water intake of 500 ml containing 500 m osmoles of electrolytes did not reduce the urine concentration as would be expected from known renal physiology

Evidence [illegible] known composition [illegible] experiment has shown the [illegible] juice extracted from [illegible] of the value of pelagic juice is still unanswered by [illegible] be said however that the lower the fat content of the [illegible] would be in the dehydrated state. It would be [illegible] less solute concentration in the water phase. It is [illegible] are likely to come into contact and an answer [illegible] experimentation. However, a survivor on realising [illegible] juices he would obtain from the flesh of [illegible] would be a valuable supplement to his water ration.

Summary

The body water of fish is a natural source [illegible] to supplement the daily water ration. [illegible] is inseparable from a certain quantity of protein [illegible]

The simplest practical method of juice extraction [illegible] and the quantity of juice yielded in this manner [illegible] 400 ml./kg. for demersal fish and 275 ml./kg. for pelagic fish.

The composition and practical experiment [illegible] estimate to be made of the value of fish juice [illegible]

With demersal fish juice a litre a day [illegible] 350–400 ml. [illegible] body water reserves, but with pelagic fish juice a litre a day [illegible] may (theoretical calculation) at the [illegible] 400 ml. [illegible] body water reserves.

Practical studies are still required to determine whether pelagic fish [illegible] caught, whether dehydrated subjects would drink the fatty juice [illegible] and if so whether it is of benefit.

EDITORIAL NOTE. Although there are [illegible] methods of pressing [illegible] from fish, it must be emphasised that [illegible] would weigh sufficiently little to form a [illegible]

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IDIOPATHIC PURPURA

BY

Surgeon Lieutenant A. K. FRAZER, R.N.V.R.

PURPURA is no longer regarded as a disease it is simply a sign in a [illegible] or syndrome in which the patient may present with subcutaneous or submucous petechiae (a small effusion of blood) but the disease can manifest itself in other ways than by the production of multiple petechiae notably by haemorrhage from practically any mucous membrane i.e. the mouth intestine kidney uterus etc or by haemorrhage into the skin muscle joints brain retroperitoneal fascial planes and retina. Bleeding from any site may occur and is usually but not always spontaneous some history of trauma generally slight in degree is often obtained and should not stray the doctor from thoughts about a more serious cause for the haemorrhage.

The purpuric syndromes are by no means uncommon this may appear to be an exaggeration but many cases are relatively benign and mild in their manifestations and are never diagnosed. This paper is presented so that an increasing awareness may lead to an improvement in the management of these cases and provide further material for investigation and research upon what is not only a fascinating but also a controversial and little known field.

There are three fundamental factors in the mechanism by which haemostasis occurs these are the platelets the blood vessels and the plasma. When a blood vessel is cut or torn blood flows out and immediately finds a change of environment a new surface which causes agglutination and disintegration of some of the platelets it is the products of disintegration which largely set in motion a series of events which lead to constriction of the torn blood vessel and coagulation of the blood and so produce haemostasis. Not all the platelets are broken up or lysed a fair number are used as building stones upon which the fibrin strands formed as an end result of clotting may gain adhesion and support. The platelets which are lysed produce various chemicals and enzymes of great importance to normal haemostasis some of which will be now considered in more detail.

(1) Serotonin (5 hydroxytryptamine) is a vaso-constrictor of remarkable power it causes rapid and fairly prolonged constriction of the capillaries for up to half an hour.

(2) Platelet thromboplastic factor: this enzyme causes in conjunction with antihaemophilic globulin and other plasma factors the formation of a powerful thromboplastin (thrombokinase) which converts prothrombin to thrombin thrombin acts then upon fibrinogen to form the fibrin clot.

(c) Platelet factor 3—which is an accelerator of the prothrombin-thrombin conversion

(d) Platelet factor 2—an accelerator of the fibrinogen-fibrin reaction

(e) Miscellaneous enzymes such as histamine, antifibrinolysins and alkaline phosphatase, to name but a few

(f) Retractozyme—which will be discussed later

It can be seen from this that these factors many of which have been isolated from platelets, affect all stages in the process of haemostasis. With the liberation of these factors the blood vessel contracts, clotting proceeds apace and the bleeding is stemmed all in a matter of a few minutes. The clot within the lumen of the vessel begins to retract possibly under the influence of the third platelet factor mentioned viz. retractozyme—retraction is due to those platelets engaged in the fibrin mesh swelling up, forming pseudopodia and pulling the fibrin strands closer together. The temporary phase of haemostasis is thus complete. Later autolytic ferments produce partial digestion of the clot, and fibroblastic activity and organisation permanent haemostasis is assured. Recanalisation of the vessel takes place and the vessel is restored.

Any upset in the mechanisms mentioned may cause spontaneous purpura or excessive bleeding. A deficiency in any of the platelet factors or a lack of response in the vessel wall will manifest itself as a purpuric syndrome. Finally, defects in the plasma factors may present as purpuric e.g. cryoglobulinaemia but are more likely to present themselves as those forms of haemorrhagic disorder known as haemophilia, Christmas disease and so forth.

Since Wright (1906) showed that platelets were derived from the megakaryocytes of the bone marrow attempts have been made to base the pathogenesis of platelet purpura upon the megakaryocyte as the single common denominator. Although the megakaryocyte cell is often responsible, not all purpuric syndromes are due to this dysfunction for the spleen and the capillaries as well as the plasma may be at fault. Nevertheless some form of classification can be worked out.

Platelet Purpura

Hypofunction

Hypofunction of the megakaryocytes results in a greatly diminished peripheral blood platelet count and is brought about in several ways.

First there may be a diminution in the number of megakaryocytes from replacement by cells in leukaemia, carcinoma or lymphosarcoma or the diminution may be due to simple hypoplasia or aplasia of the marrow as seen in the hypoplastic and aplastic anaemias. Nutritional deficiencies such as the megaloblastic anaemias, scurvy or severe liver disease may also cause a fall in the megakaryocytes. The end result is however the same and platelet production is reduced to a minimum producing a syndrome collectively known as second or thrombocytopenic purpura.

Secondly there may be a normal or even increased number of megakaryo

cytes present in the marrow. In this form of thrombocytopenic purpura [illegible] factors are working either singly or together it is the [illegible] known as idiopathic thrombocytopenic purpura (ITP) [illegible]. Several pointers to the aetiology of the disease have come in recent years [illegible] will be spent discussing the evidence now available to us.

Platelets act as antibodies just as red cells do: their antigenic [illegible] duce through the medium of the reticulo-endothelial system [illegible] lysins. Platelets can be grouped in the same way as red cells [illegible] techniques used for grouping platelets are imperfect and [illegible] available. Nevertheless two significant observations can be [illegible] in the group and antigen properties of platelets one is that [illegible] blood plasma or platelet suspensions) may cause [illegible] uses of platelet antibodies (repeat transfusions, pregnancy [illegible] is that in future immune reaction to the patient's own platelets [illegible] in some cases of haemolytic anaemia there is an auto-immune [illegible] patient's own erythrocytes. In practice it appears that the [illegible] with ITP do show some form of anti-platelet factor in their [illegible]. Platelet suspensions transfused to these cases disappear from the blood [illegible] twenty-four hours instead of the normal three to five days. [illegible] blood or plasma of these patients if transfused into normal recipients develop thrombocytopenia and occasionally frank purpura. [illegible] into this group of ITP the marrow picture of an increased number of megakaryocytes may thus be readily explained as a compensatory mechanism trying to keep up with an increased platelet destruction by the reticulo-endothelial system.

What about those cases of ITP that do not show the immune reactions just mentioned? Frank (1928) suggested that some cases of ITP were due to an abnormal splenic sereenin and that splenectomy removed the substance which destroyed the platelets. Later Evans and Duncan (1949) showed that [illegible] cultures of megakaryocytes were inhibited if spleen extract was added to the culture medium and from the splenic extract was derived a substance which was present in excess from the spleens removed at operation in ITP. Unger (1947) isolated two substances, splenin A and splenin B, which had opposing actions: splenin B produced increased capillary permeability and fragility and hence prolongs the bleeding time. Minulten (1945) extracted a substance thrombocytosin, which is alleged to increase the number and function of platelets as well as improve vascular resistance, corrosone and ACTH seem to increase the [illegible] abilities of platelets and to accelerate the clotting time, [illegible] giving a well defined improvement in capillary resistance and [illegible] the bleeding time. Recently Bonnin (1956) has found that the platelets in ITP are functionally as well as numerically deficient.

All this evidence points to a pituitary cortex-splenic control over platelet production and destruction and also a less well understood effect on the small blood

[1]Werlhof's disease: purpura hemorrhagica.

vessels. In those cases where splenectomy is of value in ITP one would expect a pathological spleen and this seems to occur either from an increase in the destruction of circulating platelets or because of its suppressive effect upon the megakaryocytes in the marrow.

Thrombocytopenic purpura may also be due to a hypersensitivity to a particular drug; quinine, quinidine, sedormid, arsenicals, sulphonamides, gold compounds and many others have been reported in this context. Some patients often develop a thrombocytopenic purpura following digestion of some particular food to which they have become allergic. These types of cases are becoming more common and should always be suspected when a patient suffering from a purpuric syndrome is seen for the first time.

Following massive haemorrhage from any source, a platelet deficit may occur and replacement of the blood loss by transfusion of stored blood may not give an adequate number of viable platelets to the patient; post-haemorrhagic purpura then occurs. It may become manifest by repeated secondary haemorrhages from a wound or by frank purpura, but it may be latent and may only be shown by a positive tourniquet test and a prolonged bleeding time; the platelet count may or may not show a thrombocytopenia. Neonatal and congenital forms of ITP are rarely seen, but should be borne in mind in babies with intracranial haemorrhage or oozing umbilical cords.

Hypofunction

An excessive number of circulating platelets occurs in several diseases which often present with a purpuric syndrome. In these diseases, such as polycythaemia vera, leukaemia and following splenectomy,[1] or in other rare myeloproliferative diseases, the megakaryocytes are increased in number and often produce platelets which, could like any mass-produced goods, be poor in quality. It is this qualitative or functional defect of the platelets which gives rise to the purpura or spontaneous haemorrhage seen in these cases, which are collectively called 'haemorrhagic polycythaemia'. Hardisty and Wolff (1955) reported that in vivo breakdown of the defective platelets may give rise to thrombo-embolic incidents from which these patients suffer.

Dysfunction

Glanzmann (1918) described a syndrome in which the patients suffered from a haemorrhagic diathesis but had normal platelet counts; he asserted that the platelets were functionally deficient. Much criticism has been levelled at Glanzmann's investigations of these patients, and some authorities suggest that his experimental methods were so much at fault that no reliance can be placed upon his deductions. But this as it may, evidence has accrued since which upholds his hypothesis; many cases have been reported under various titles in

[1] This may upset the primary cortico-splenic control over platelet production and capillary fragility and lead to a (*a*) decreased destruction (*b*) increased production of platelets.

which a functional defect of the platelets has caused a purpuric syndrome in patients with a normal platelet count. The megakaryocytes as seen in a marrow smear appear normal.

By the use of the thromboplastin generation test, Biggs and Douglas (1953) found that the amount of thromboplastin produced by a given unit of platelets can be measured; this invaluable test has shown that platelets are functionally abnormal not only in thrombocytopenic and thrombocythaemic states but also where the platelet count is normal and no other defect in the coagulation mechanism exists. Many cases of purpura which have previously defied classification have been shown on investigation with modern techniques to be due to a functional defect in the platelets; such a syndrome is known as thrombasthenia, thrombocytasthenia or perhaps more correctly as thrombocytopathia haemorrhagica.

Vascular Purpura

The pathogenesis of the purpuric syndromes is further complicated by a number of haemorrhagic states which are not due to defects of the platelets or plasma factors but in which the sole responsibility for the purpuric manifestations lies in the vascular mechanism. In these cases the only finding is a positive tourniquet test and sometimes but not always the bleeding time is prolonged. The majority of cases show purpuric and ecchymotic lesions in the skin with little or no mucosal haemorrhage; the reason for this is obscure and classification can only be descriptive.

Senile and cachectic purpura is not infrequently seen in the aged and undernourished whose skin vessels have lost the support of subcutaneous fat and elastin. Following the minor everyday traumata of life unsupported vessels rupture, producing petechiae, ecchymoses or even haematomas.

Purpura simplex is a benign affection from which many people suffer. Spontaneous bouts of mild purpura occur without any generalized illness in women; the attacks may be associated with the onset of normal menstruation. In this respect it is interesting to note that ITP of the chronic variety may in women go on to an acute exacerbation at the onset of menstruation (David's syndrome); further evidence for the part played in haemostasis by the endocrine system. A familial type has been reported as being closely allied to purpura simplex, but is associated with a higher than normal incidence of rheumatic fever and rheumatoid arthritis. Devil's pinches is the name given to simple easy bruising seen in a number of women; ecchymoses occur following trauma of the slightest nature and rupture of the vessel is preceded by a sharp vascular (presumably) pain.

Mechanical purpura sometimes follows violent muscular contraction sufficient to raise the venous pressure and cause rupture of the skin capillaries; it is sometimes seen in whooping cough or in childbirth. Traumatic asphyxia is

akin to this as is orthostatic purpura which occurs over the lower extremities in those with marked varicose veins.

Vascular purpura can also occur in the haemorrhagic exanthemata (smallpox, measles and scarlet fever) in toxaemias such as diphtheria and typhus, in those diseases where septic embolization occurs (subacute bacterial endocarditis, meningococcal and streptococcal septicaemia). In uraemia, diabetes and hypertension ecchymoses and frank haemorrhage are well known features of increased vascular fragility. Drugs may also cause purpura without a thrombocytopenia.

No discussion of vascular purpuras would be complete without some mention of the Henoch-Schoenlein type of purpura which is more accurately designated acute vascular anaphylactoid purpura. This disease is characterized by a widespread disaffection of the small blood vessels (capillaries) and purpura is only one manifestation of the process. There is usually a history of sore throat or acute upper respiratory infection occurring two or three weeks previously. The disease manifests itself by an alarming and explosive development of large oedematous haemorrhagic macules of purple hue (hence purpura) and small petechiae are rarely seen. The eruption is confined to the extremities and tends to spare the trunk. The joints are usually affected, sometimes by simple limitation of movement and at other times by the kind of swollen joint seen in acute rheumatic fever. Abdominal pain is a notable feature and may simulate a surgical emergency—bright red stools associated with tenesmus and diarrhoea may be passed. Haematuria often occurs, showing involvement of the kidneys. Illusions from pleurisy, pericarditis and even the iris may occur.

The common pathological feature of all these disturbances is a diffuse vasculitis, the vessels become cuffed with acute inflammatory cells. The pathogenetic mechanism is probably immunological. Dameshek's (1953) concept of the disease is that sensitivity to an infection (or drug) produces an allergic build up over a period of one to three weeks which results in a haemorrhagic explosion. It is this latter which manifests itself by the purpura, arthralgia, haematuria, etc. and Dameshek compares these to other diseases of recognized allergic nature such as acute rheumatic fever, acute glomerulonephritis, disseminated lupus and so forth. Periarteritis nodosa appears to be a similar type of disease affecting somewhat larger blood vessels.

Plasma Purpuras

These are an extremely rare group in which the purpura is an outcome of some upset of the plasma proteins. Such upsets are usually secondary to such diseases as amyloidosis, multiple myeloma, kala-azar and rheumatoid arthritis; occasionally cryoglobulinaemia and macroglobulinaemia may be primary. The pathogenesis is obscure, but the consensus of opinion is that these abnormal plasma proteins interfere with the normal mechanism of coagulation by adsorption or substitutive actions.

[1] An acute form of vascular purpura simulating ITP is seen in the Waterhouse-Friderichsen syndrome.

Diagnosis

The diagnosis of the various forms of purpura syndrome must be made upon an awareness that such syndromes exist. A careful enquiry into past attacks of purpura and other haemorrhagic diseases is essential; the patient should be questioned about similar happenings within his family.

Examination should not miss the chronic splenomegaly which is often palpable in the platelet purpuras.

With regard to laboratory investigations a bleeding test, routine blood count and serial platelet counts by the same observer are essential. Absolute values may or may not be required and a marrow biopsy is not essential but may exclude the presence of megaloblastic anaemia or leukaemia.

The following tests should be done as a matter of routine: bleeding time, tourniquet test and whole blood coagulation time, preferably in silicone-coated tubes. Prothrombin time and prothrombin consumption test; this latter should point the way to the more complex thromboplastin generation test but with practice this can be done for every suspected case.

The bleeding time and tourniquet test can be simply done in the surgery or sick bay and gives an excellent indication as to the need for further investigation. The Ivy (1940) technique is most valuable in estimation of the bleeding time because it has become more standard than Duke's (1912) method; all that is required is a Bard Parker blade, a sphygmomanometer and Whatman No. 1 filter papers. The cuff is blown up to 50 mm Hg and an incision 2 mm by 2 mm is made over the flexor surface of the forearm, the time being noted. Dab the cut surface at half-minute intervals until the bleeding ceases. The normal time is from three to six minutes—any time above this may be considered abnormal.

The tourniquet test is also simply performed: the cuff is inflated to between systolic and diastolic pressures (c. 90–100 mm Hg) for five minutes. A circle the size of a penny is charted on the antecubital fossa 2 cm. below the cuff. At the end of five minutes the cuff is removed and the number of petechiae in the circle counted. Above ten petechiae is abnormal and suggests increased capillary fragility.

Treatment

Treatment is still somewhat unsatisfactory and empirical. On general principles some but not all purpuric syndromes seem to respond well to ACTH and cortisone; these drugs should be tried and the response observed in adequate and high dosage. A few cases will be found to become worse under such therapy and treatment must then be stopped immediately and reliance placed upon transfusion of fresh or stored whole blood. Fresh blood is preferred but stored blood maintains a fair degree of platelet activity up to its expiry date (twenty-one days) following withdrawal from the donor, as recorded by Mustard (1956). Platelet suspensions are an advantage but few centres at the moment can cope with the preparation required.

In this [illegible] due to overactivity of the spleen [illegible] indicated [illegible] splenectomy should be performed on patients suffering from ITP but the auto-immune type will probably not benefit. Cortisone should be given before and after operation.

It is always a good principle to stop any drug which the patient may be taking when first seen with a purpuric syndrome.

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Clinical Notes and Cases

AN IMPROVISED PERSPEX SPINAL SPLINT

BY

Surgeon Captain W J FORBES GUILD, R.N

The treatment of prolapsed disc has been approached from many angles and that fact in itself is indicative of the difficulty of the problem. It is no part of this communication to review treatment in general but merely to report a method of ambulant immobilization of the spine which is believed to be new (though that belief is open to correction). It was undertaken in the first instance as a shipboard improvisation but its apparent success in practice encourages the belief that its development and adoption [illegible]

In February 195[illegible] a senior officer [illegible] prolapse between L 4 and L 5. He was treated for three months in a full length plaster of Paris jacket. As the occupant of an adjacent cabin [illegible] observe the defects of this cumbersome appliance and to hear [illegible] amplified by intelligent and bitter subjective comment. When released from the plaster of Paris he was fitted with a Goldthwaite belt.

In June 1957 while still not completely free from symptoms [illegible] exacerbation. Rest in bed was indicated but would not be [illegible] of his appointment and [illegible] and spent [illegible] with this plaster and [illegible] suggested [illegible] jacket would have much [illegible] department of the ship was asked to [illegible] close fitting splint extending the length of the [illegible] engineering department suggested Perspex [illegible] the [illegible] from a plaster of Paris template.

Making the Template.—The patient was placed [illegible] under the pelvis and [illegible] as determining the [illegible] width of the splint [illegible] of the [illegible] T 2 to S 2 [illegible] were then applied direct to the skin and moulded [illegible] few minutes for adequate drying, and the template was complete.

Making the Splint.—In the pattern shop the plaster template [illegible] mould and a heavy white metal pattern [illegible] mould leaving the plaster template [illegible] now laid flat across the top of the [illegible] torch moved to and fro across its surface. As the Perspex [illegible]

Fig. 1 — The plaster impression of the back of the hollow and the moulded Perspex as cut top of it. The whole metal former has been lifted out.

Fig. 2 — Splint in position.

gradually [illegible] on top of [illegible] could and [illegible] white metal [illegible] One [illegible] slots [illegible] like [illegible] from tropical shorts

Discussion

Fig 2 shows the spinal splint in position [illegible] and the patient found it better to wear it on top of [illegible] strap pressure on his shoulders Nevertheless it remains [illegible] without any tendency to dislodge

From observation of the patient's movements [illegible] to stoop it was clear that his spinal column was controlled [illegible] comparable to that achieved by a plaster jacket and he could [illegible] He remains enthusiastic over its lightness and relative comfort [illegible] One splint broke in wear during the first forty eight hours [illegible] traced to a strap slot cut with squirrel-off instead of rounded ends Another final point is that the uncontrolled oxyacetylene torch heat [illegible] Perspex probably weakens it Given heat might be better and [illegible] Perspex could readily be employed

One benefited from having a patient both [illegible] operative His one major suggestion for improvement was the [illegible] for the two narrow ones This might be [illegible] further experience but over large slots in the Perspex would tend to weaken it The patient did not feel the necessity for crutch straps but he was a [illegible] exaggerated spinal curves In a shorter subject crutch straps might be required to prevent riding up

The making of this improvised splint is reported [illegible] interesting piece of co-operation between departments in one of H M Ships [illegible] publication helpful to others in improvising light splints when hospital facilities are not available

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TWO CASES OF PATENT DUCTUS ARTERIOSUS IN NAVAL RECRUITS

BY

Surgeon Lieutenant-Commander S. J. LLOYD, R.A.N.

PATENT ductus arteriosus is not an uncommon congenital condition but it is unusual for patients with a patent ductus to gain entry into the Services Two cases were seen at Flinders Naval Hospital Victoria and it is tabulated here the other was returned to duty after successful operation

Case 1.—A recruit of 17 years from Queensland joined the R.A.N. in the engineering branch Four days after entry he reported sick with an upper respiratory tract infection on

When examined on admission to hospital in [illegible] continuous systolic and diastolic murmur [illegible]

Chest X-ray report on 10.11.55: The [illegible] limits but the pulmonary artery is prominent [illegible] films and screening of the chest [illegible] on the left border of the heart. Pulsation [illegible] enlarged and the peripheral pulmonary [illegible] left ventricle shown by barium swallow [illegible] the clinical diagnosis of patent ductus arteriosus [illegible] is physiological. There is no [illegible] Blood pressure: 6.11.55—100/60; 7.11.55—110/[illegible] in the cardiac condition and [illegible]

The diagnosis of patent ductus arteriosus [illegible] discharged from the Service [illegible]

Case 2.—A recruit of 18 years [illegible] three weeks earlier. On [illegible] of the heart. The patient [illegible] the heart and had engaged in [illegible] Blood pressure [illegible] mm Hg. [illegible] Chest X-ray report [illegible] Although [illegible] pulmonary [illegible] There is no [illegible] appear normal. Apart from the [illegible] no other [illegible] signs.

A [illegible] diagnosis of patent ductus arteriosus was established and operation [illegible]

[illegible] of the ductus was performed. At operation [illegible] was found [illegible] 0.8 cm in diameter and 1.0 cm [illegible] the pulmonary artery [illegible] The ductus was [illegible] and ligated with [illegible] finally applied.

[illegible] showed a pneumothorax is present [illegible] left [illegible] extending down to the level of the [illegible] towards the left base. Repeat X-ray [illegible] The blood pressure reading [illegible]

[illegible] and the patient was discharged to sick leave [illegible] weeks after [illegible] the [illegible] although there [illegible] which persisted. The patient returned to full duty [illegible] and he has remained well since the operation.

SUMMARY

Two cases of patent ductus arteriosus were found amongst recruits in the Royal Australian Navy, one of whom was successfully operated upon.

ACKNOWLEDGMENT

I am grateful to the Medical Director-General, Royal Australian Navy, Surgeon Rear Admiral [illegible] Lockwood, *C.B.E., M.V.O., D.S.C., Q.H.S.*, for permission to publish these cases.

A CASE OF ACUTE INTESTINAL OBSTRUCTION IN A YOUTH AGED 18 WITH A HISTORY OF CONGENITAL PYLORIC STENOSIS AS AN INFANT

BY

Acting Surgeon Lieutenant-Commander J. B. SHIELS, R.A.N.

A PATIENT during his National Service training at sea apparently began to complain [illegible] sea sickness [illegible] abdominal pain for a period of [illegible] weeks. He had nausea [illegible]. Appetite was poor though he managed [illegible] his meals [illegible]. Bowel [illegible] was normal.

Past History.—Operation for pyloric stenosis at the age of 6 weeks.

23rd March, 195[illegible]. He was admitted for abdominal investigation [illegible] the Naval Hospital, Manus Island [illegible] having [illegible] by a medical officer.

On admission [illegible] mild epigastric pain [illegible] occurring [illegible] and [illegible] related [illegible].

On Examination.—His general appearance was good. His tongue was [illegible] and furred.

Abdomen.—[illegible] On palpation there [illegible] generalized tenderness [illegible] marked in the mid-epigastrium [illegible]. There was no [illegible] distension [illegible] epigastrium. Bowel sounds were present.

Pulse rate 88. Blood pressure [illegible]. Rectal examination N.A.D. Physical examination [illegible] otherwise normal.

Investigations.—Straight X-ray of abdomen showed [illegible] small bowel [illegible]. Stool [illegible] negative. Hb. 14 grammes per cent. [illegible] W.B.C. 7,500 per c.mm. E.S.R. [illegible] gave a positive result.

Provisional Diagnosis.—(1) [illegible] (2) [illegible] with pyloric [illegible].

Management.—He was observed [illegible] antispasmodics. His condition improved [illegible] that his pain was related [illegible].

Over the next three days his [illegible] periods of severe epigastric pain [illegible] radiating through to his back. [illegible] maximum tenderness was still [illegible] epigastrium [illegible] and distension [illegible] this region.

It was decided to carry out a diagnostic [illegible] 7th March, 195[illegible], which gave the following result: Oesophagus [illegible] from stomach (fifteen minutes). [illegible] immediately followed [illegible]. Within nine hours the barium had reached [illegible].

The barium meal established the diagnosis of [illegible] region of the upper jejunum.

Twenty-four hours later his condition [illegible] was noticed and operation [illegible] suction and intravenous fluids [illegible].

Anaesthetic Notes.

Premedication: Omnopon 1/3 grain, Scopolamine 1/150 grain.

General anaesthetic: Pentothal 0.4 gramme, [illegible] 160 mg., [illegible] Oxygen [illegible]. Pethidine 50 mg. [illegible].

Operation [illegible]

The [illegible] grossly distended [illegible] band crossing the [illegible] fairly thick root and [illegible] active peristalsis and [illegible] bowel.

The obstruction was [illegible] and the abdomen [illegible]

Suction was continued post-operatively [illegible]

Mild post-operative [illegible] to entirely in the large bowel [illegible] the help of a small Olive Oil enema and [illegible]

Further convalescence was uneventful.

COMMENT

The case presented some interesting facets:

(1) The patient lacked much in co-operation [illegible] the [illegible] rather confusing picture caused by the proximity of the lesion to the [illegible] and hence the close relation of symptoms to food etc. combined [illegible] diagnosis difficult.

(2) The constriction band had evidently been present some considerable time and the mechanism whereby obstruction took place made the relative lack of past history seem atypical. One would expect a lesion of this type to produce recurrent symptoms over a much longer period.

(3) In this remote locale major abdominal surgery cannot be entered upon without serious consideration. The firm establishment of the diagnosis with barium meal was therefore considered essential, a procedure which probably would not be practised under more favourable conditions.

(4) The differential diagnosis, and not proving the assumption that the lesion was related to previous pyloroplasty, was the most interesting feature of the case.

A CASE OF PULMONARY BAROTRAUMA WITH MEDIASTINAL EMPHYSEMA

BY

Surgeon Lieutenant A. T. THOMASON, R.N.

MEDIASTINAL emphysema occurs as the result of a relative increase in intrapulmonary pressure causing a rupture of an alveolus with escape of air into the lung substance and the spread of the air into the mediastinum (Macklin and Macklin 1943). Its occurrence as the result of rapid decompression was first described by Polak and Adams (1932 and 1933). To understand how it occurs we must consider elementary pulmonary dynamics.

For convenience an alveolus can be looked on as a box with one side missing, the entrance. Round the four adjacent sides of the entrance run the capillaries. At the base is one layer of connective tissue interposed between the base

and the arteriole and venule. This connective tissue surrounds the vessels forming the vascular sheath, and is itself surrounded by a ring of "parenchymal" alveolar bases.

During normal inspiration this perivascular ring of alveolar bases widens, placing a consequent stretch on each base, a stretch which is augmented by the tension resulting from the normal inspiratory lengthening of the bronchial tree. In such a delicate arrangement it is not surprising that a sudden increase in intrapulmonary pressure of any magnitude will establish a pressure gradient between the alveolar air and the underlying blood vessels sufficient to cause minute rupture of the stretched alveolar base and to allow air to escape into the interstitial spaces. Furthermore, if the increased pressure is present in both lungs the pressure gradient is enhanced by the mechanical resistance to the entry of blood into the thorax with a resultant fall in pressure in the pulmonary circulation.

Once an air leak is established it tends to continue until conditions arise to prevent it. There is also a kind of ball valve mechanism which permits air to escape from the alveolus but prevents it returning even when a positive pressure exists in the interstitial spaces. It is worth noting here that air can only escape into the tissues during the expiratory phase, not during inspiration as appears at first sight.

The air does not stay in the region of the vascular sheath which it has invaded, but tends to spread through the pulmonary connective tissue.

The pulmonary connective tissue is a continuum of soft areolar tissue easily dissectable by air. It extends directly through the lung root medially into the mediastinum, and laterally spreads out in the lungs in the branching radiating rays. From the vascular sheath it is down these rays that the air spreads towards the lung root. Two factors seem to influence this spread. One is the continual build up of air bubbles from the leak, and the other is the "milking" action towards the hilum of the radiations themselves in the course of normal respiration. In this way air finds its way into the mediastinum. As pressure in the mediastinum increases, respiratory and cardiovascular embarrassment occurs. If relief is not obtained a point is finally reached where the pressure prevents satisfactory filling of the great vessels and heart, with ensuing circulatory collapse and death.

In the 100 ft Submarine Escape Training Tank, H.M.S. *Dolphin*, submariners learn a method of escape in which they ascend from varying depths without breathing apparatus ("Free Escape") but wearing a life jacket which brings them up at a rate of 5 ft./sec. (Crocker, 1958). The trainee takes a deep breath in the escape lock and then vents air as hard as possible during his ascent. By this means he keeps the intrapulmonary pressure within normal limits as the ambient pressure decreases and the air expands. Obviously if venting is inadequate a raised intrapulmonary pressure will occur with all the dangers of alveolar rupture.

Case Report.—Seaman, 19½ years. This rating made a free ascent with buoyancy from the 60 ft. lock of the Training Tank. He appeared to vent adequately during the

Discussion

(equal to [illegible] water). [illegible] take [illegible] scent (Polák and [illegible] practice [illegible] grounds [illegible] the necessary [illegible] [illegible] would be [illegible] serious fault [illegible]

[illegible] [illegible] by the pain [illegible] [illegible] breathing [illegible] difficult [illegible] [illegible] [illegible] with the [illegible] [illegible] the passage of [illegible] [illegible] spaces.

The [illegible] symptoms [illegible] [illegible] [illegible] of a slow air leak. The symptoms in which the patient shows [illegible] [illegible] impression and [illegible] [illegible] [illegible] rapid [illegible] [illegible] [illegible] emphysema with [illegible] [illegible] spread into the neck.

Unfortunately [illegible] [illegible] [illegible] [illegible] [illegible] impression but in these [illegible] [illegible] impression is [illegible] [illegible] (Kinsey 1954). In all [illegible] this accounts for the [illegible] [illegible] [illegible] except for the [illegible] [illegible] [illegible] [illegible] palpation [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Why the interstitial [illegible] is present is unknown. [illegible] [illegible] that in a case reported by Klein *et al* (1952) a small [illegible] [illegible] but no explanation is offered.

The [illegible] was administered on the principle [illegible] should replace the nitrogen in the mediastinum and would [illegible] much more rapidly as pressure decreased. This is the first time [illegible] knowledge that [illegible] has been used for this purpose. [illegible] no contraindication can be drawn regarding its efficacy but [illegible] did not do any harmful effects. The oxygen was administered [illegible] [illegible] pressure routine.

This case helps to emphasize some important points. [illegible] should never dismiss lightly respiratory symptoms [illegible] [illegible] who have undergone rapid decompression.

Secondly is the insistence on [illegible] [illegible] the mediastinal pressure. Here it was achieved by [illegible] [illegible] alone by passing a curved needle through the [illegible] [illegible] behind the posterior aspect of the manubrium into the anterior mediastinum (Cundoreth 1936). This manoeuvre however is fraught with danger and is not recommended [illegible] the [illegible] [illegible] [illegible].

And finally the necessity for [illegible] [illegible] [illegible] and length is shown.

Summary

(1) The mechanism of mediastinal emphysema is discussed.

(2) A case occurring during submarine escape training is [illegible].

(3) The importance of early symptoms and the [illegible] [illegible] of mediastinal pressure is shown [illegible] methods of [illegible] relief [illegible].

ACKNOWLEDGMENTS

I wish to thank Captain P J Cowell *DSC* RN [illegible] Squadron for permission to publish this article

My thanks are also due to Surgeon Commander W L [illegible] RN for his help in the management of the case and also to Surgeon Commander [illegible] MBE RN for his criticism of the article

Finally I wish to thank Mr W Smith of the Submarine Escape Training Tank for his patient help with the typing

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A CASE OF MUMPS MENINGO-ENCEPHALITIS PRESENTING AS A TOXIC CONFUSIONAL STATE

BY

Surgeon Lieutenant R J FALLON RNVR

MUMPS meningo encephalitis is not an uncommon condition In the fifty two weeks ending 4th May 1957 81 cases (including the present one) were reported in the Weekly Reports from Public Health and Hospital Laboratories in England Wales and Northern Ireland on Matters of Epidemiological Interest published by the Public Health Laboratory Service Of these cases 43 occurred in males 11 in females and in a further 27 cases the sex of the patient was not stated Thus numbers represent a conservative estimate of the incidence of this complication of mumps as it is probable that many cases either are not diagnosed or are not reported

Mumps meningo encephalitis may precede coincide with or follow glandular involvement or may occur in its absence The onset is usually acute but in the selected series of 27 cases with predominantly encephalitic manifestations reviewed by Miller Stanton and Gibbons (1956) 7 had a more gradual onset

Of these cases [illegible] lapsed [illegible] into stupor whilst the [illegible] present [illegible] more definite physical signs. 12 of the cases reviewed had [illegible] signs [illegible] psychosis varying from a simple confusion to severe delirium. [illegible] of 27 cases reviewed represented a highly selected [illegible] cases reported since 1934 the proportion (44.4 per cent.) of [illegible] psychosis does not reflect the true incidence of this manifestation [illegible] large series toxic psychoses were observed rarely ([illegible] 1947; Finkelstein, 1938).

Case Report

The patient, an unmarried signalman aged 20 [illegible] from leave 7.1.57. He then began to feel depressed [illegible]. He reported to his sick bay at that time. His symptoms [illegible] and he reported sick again 21.1.57. At that time he [illegible] going absent without leave. He was referred to the [illegible] and was seen 23.1.57. At that interview he was found [illegible] time and place but his conversation and answers to questions were [illegible] incoherent. He appeared unable to explain what his complaints were except that he could not recall things, that he felt confused and depressed and that he was [illegible] that there was something wrong with himself. He denied feelings [illegible] hallucinations or any physical feeling of ill health except for pains behind the eyes for some two to three weeks, a heavy feeling in the head for the past two [illegible] days and drowsiness also of several days duration. He stated that there was no [illegible] why he should be sleepy as he normally slept well and was not up late the evening prior to the interview.

Objectively his mood was one of depression and somnolence (although shivering with cold he almost fell asleep whilst being examined). On examination the only abnormal findings were a pyrexia of 100° F. and very brisk tendon reflexes.

He was admitted to hospital the same day where the [illegible] findings were confirmed but in addition it was noted that he complained of a throbbing occipital headache since rising that morning. A lumbar puncture was performed, the cerebrospinal fluid pressure being 80–90 mm. of water with a free rise and fall [illegible] and abdominal compression. The fluid was found to contain 150 cells per c.mm., these being [illegible] lymphocytes. The protein content was 70 mg. per 100 ml. [illegible] being found. The chloride and glucose levels were normal. A diagnosis of [illegible] meningitis was made.

The next day no change was noted in his condition until the evening when minimal neck stiffness was observed and the patient [illegible]. 25.1.57 the patient [illegible] but did not complain of headache or photophobia. There were no [illegible] found on physical examination apart from slight neck stiffness on extreme flexion. The next day his condition was unchanged except that his temperature [illegible] to normal on the night of his admission had [illegible] 101 [illegible] 102° F. [illegible] returning towards normal.

28.1.57 he was apyrexial but was still [illegible]. There [illegible] neck stiffness [illegible] that he remained drowsy and was somewhat childish. Examination revealed a left [illegible] orchitis and despite the patient giving a history of mumps in childhood a diagnosis of mumps meningo-encephalitis and orchitis was made. In an attempt to reduce the inflammatory process in the left testicle, benadryl 50 mg. twice daily was administered orally. The next day he was much more drowsy and his temperature [illegible] 102° F. with a peak of 104° F. during the day. His left testicle was larger but was not tender.

On 30.1.57 the patient's drowsiness and temperature were unchanged [illegible] that he complained of neck stiffness. A full neurological examination [illegible] no abnormality except some weakness of grip and loss of co-ordination in both upper limbs. Benadryl was stopped. The following day his condition was much improved. He was apyrexial, alert and his grip had returned to normal. From then onwards he remained

[illegible] and confused [illegible] A complete [illegible] gave the following results

	Mumps S	Mumps V
Serum 23.1.57	+1:8	[illegible]
Serum 4.2.57	+1:512	[illegible]

[illegible] returned to his unit from sick leave 8.3.57 [illegible] his discharge from hospital. He [illegible] a month later as an outpatient. At that time [illegible] his only complaint was that he had not yet [illegible]

Discussion

Infection with the virus of mumps may give rise to a number of neurological manifestations. The commonest are meningitis and meningo-encephalitis. Less commonly there appears an encephalitis resembling the post-infectious encephalitides associated with the common exanthemata. On [illegible] cases hemiplegia, myelitis, polyradiculitis and polyneuritis have been described. These various neurological pictures are reviewed by Miller *et al.* (1956). The onset of meningitis, meningo-encephalitis and myelitis is commonly acute; polyradiculitis and polyneuritis more gradual.

The principal points of interest in the case reported are in the nature of the disease and its very slow onset. In this case the picture is complicated by the fact that there is no history of exposure to infection, making it difficult to place the probable time of onset. The patient, however, gave a clear history of depression and [illegible] dating from his return from leave some sixteen days before he was seen by the Neuro-Psychiatrist and eighteen days before the onset of the unusual [illegible] during his period in hospital. Such a slow onset of the condition has rarely, if ever, been reported.

The reasons for the [illegible] period of symptoms and signs in this patient are not clear. In the absence of a history of contact with a case of mumps it is impossible to analyse the sequence of events, but it is possible that the neurological involvement followed an asymptomatic salivary gland infection. That such asymptomatic infections may occur has been shown experimentally by Henle *et al.* (1948), who inoculated children and found that in six out of eight, without clinical manifestations, virus appeared in the saliva fifteen to sixteen days after exposure.

Meningo-encephalitis quite frequently follows salivary gland involvement, an interval of up to twenty-three days being noted by Miller *et al.* (1956) in the cases which they reviewed, and it is possible that in this case the slow onset represented the latent period between salivary gland involvement and central nervous system involvement. The initial low titres of complement fixing antibody noted in the specimen of serum taken 23.1.57 do not rule out this possibility, as Enders *et al.* (1945) found that although most cases developed complement fixing antibody by the second to third week after the onset of mumps

[illegible]

Summary

[illegible]

Acknowledgements

[illegible]

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DENTAL CLINICAL MEETING
ROYAL NAVAL BARRACKS, CHATHAM

A Clinical Meeting was held in the Naval Dental Centre at the Royal Naval Barracks Chatham on Thursday 27th June 1957

Surgeon Captain (D) C J Finnigan LDS QHDS Director of Dental Studies and Mr F A McCallum *BEM*, Demonstrator Dental Technician from the Royal Naval Medical School and nineteen dental officers from the Nore Command attended A varied programme of talks films and demonstrations calculated to stimulate interest and discussion whilst keeping officers abreast with recent advances in dental techniques was arranged Lunch and tea in the Wardroom provided an opportunity for the exchange of ideas to the mutual benefit of all present

The Meeting opened with an informative talk on the function and scope of the Director of Dental Studies Department in the Medical School this was followed by a demonstration by Mr McCallum of a sand blasting apparatus developed in R N Medical School and constructed at the R N Physiological Laboratory A Vacuum Investor apparatus working off a simple water jet pump was demonstrated by Surgeon Commander (D) E W King Turner and Mr A G Humphrey

The morning session concluded with an excellent colour film made and kindly loaned by Professor T Talmage Read F R F P S, F D S R C S Warden of Leeds University Dental School and Hospital the film showed the surgical preparation and technique employed in the construction of sub periosteal dental implants The introduction of the subject and commentary on the film was ably presented by Surgeon Commander (D) A E Cadman from H M S *Ceres*

The afternoon session commenced with the screening of a film loaned by the Royal Air Force Dental Service which showed clearly a sound technique for the various surgical and prosthetic stages in the preparation of acrylic jacket crowns in vital and non vital teeth

The final period of the meeting was devoted to demonstrations and discussion in which all officers joined Ten cases illustrated by coloured acrylic models and casts in technical alloy were presented The subjects discussed included an exostosis of the mandible and its treatment an orthodontic case and one of gingivitis The prosthetic aspect included the design and construction of a Continuous Clasp Labial Bar and Nylon dentures and a case of gross malocclusion

The last item exhibited was the Crest recently approved by the Admiralty and the College of Heralds for H M S *Pembroke* which had been produced in coloured acrylic by the staff of the Command Dental Laboratory

Reviews

EMERGENCIES IN GENERAL PRACTICE. Specially Commissioned Articles from the *British Medical Journal*. [illegible] 1955 to June 1956. Pp. x + 470, with illustrations. London: British Medical Association. Price 25s.

This is an attractive [illegible] volume containing a widely selected series of articles which, as its title [illegible] primary interest to the general practitioner or his equivalent in the Services. [illegible] however seems a modest claim and it will undoubtedly entertain specialists [illegible] every rank of their career.

It comprises over fifty [illegible] written by experts on conditions where prompt diagnosis and treatment is essential.

To make an adverse criticism first: this book suffers from deficiencies—nowadays almost unavoidable in medical anthologies—a result of the speed of advances and changes in medicine, particularly therapeutical and though these articles here have been revised one must remember that some of them first came to print in January 1955 and one might reasonably perhaps a little apposite much water has passed since then.

One notices particularly the omission of the corticosteroids in the treatment of allergic reactions and there has now proved the value of noradrenaline in shock which drug has no mention here.

It would be invidious to try and select the plums from such an array of articles but the reviewer found those on syncope, cardiac asthma, the acute abdomen and diabetic coma outstanding in a book which will be a valuable and pleasing addition to one's bookshelf.

INDIVIDUAL DIFFERENCES IN NIGHT VISION EFFICIENCY. By M. H. Pirenne, F. H. C. Marriott and E. F. O'Doherty. With a section on 'The Frequency of Seeing at Low Illuminations' by H. K. Hartline and P. R. McDonald. Pp. vii + 83. Medical Research Council Special Reports Series No. 294. London: Her Majesty's Stationery Office. Price 8s. net.

This report deals with a problem which has far-reaching theoretical and practical consequences. It began by investigating the relationship between the scotopic acuity of the eyes and perceptual ability. Although the relationship is a complicated one because perception is a function of intellectual factors as well as of sensory acuity, when allowance was made for the intellectual psychological factor a positive correlation emerged.

The first task of the authors was to discover the distribution of visual acuity at low illuminance levels using the Landolt rings in 22 young trained subjects. They then determined the correlation between this and the absolute light threshold using in the same group of subjects a special method of fixation and flash.

Various complications such as the degree of mental concentration the portion of retina employed and the effect of practice had to be allowed for. It was found that a given change of relative luminance had a larger relative influence on acuity when near the absolute threshold whereas at very high luminances acuity ceased to be dependent on it. A significant correlation was found for scotopic luminance.

Part 3 of the report deals with the filter factor theory. This in its simplest form assumes that subject A behaves as if he had the same eyes brain mind etc. as subject B but had in front of his eyes light filters of transmission 1/k, the value being the filter

scotopic illumination experiments [illegible] with good approximation

[illegible] perceptual efficiences in which the test [illegible] abridged photometer employed engravings by Hogarth. Naval officers took part in the [illegible] whom one was a leading stoker. The subject sat in complete darkness [illegible] a dim degree of light (0·0001 ft. L) and then turned on and he [illegible] all the details he could see. It was found that after training the [illegible] related to the value of the flash as the threshold.

Part [illegible] previous experiments from the point of view of the quantum theory [illegible] appear that the amount of light stimulating the retina during the flash [illegible] and during those with the Landolt ring consists only of a few quanta.

The [illegible] in three appendices. The first two are somewhat technical while the third discusses the method of carrying out simple tests of visual efficiency at low illuminations.

The authors of this report are to be congratulated upon the efficiency and thoroughness with which they have carried out and interpreted their experiments. Its full understanding however requires a knowledge of higher mathematics and physics which is denied to most ophthalmologists but one hopes that it may prove possible later to publish a simplified version.

THE QUICKSILVER DOCTOR. By Kenneth Dewhurst. Pp. 192 + 17 Plates. First Edition. 1957. Bristol: John Wright and Sons Limited. Price 21s.

One of the difficulties attaching to the writing of biographies of the lesser lights is that while the achievements of the hero may be ascertained sufficiently readily many of the details that go to form a rounded character are so often lacking. Thomas Dover was no exception to this generalization. Before reading this book my knowledge of the subject was confined to a belief that Dover was a Bristol doctor turned pirate who sailed round the world with Captain Woodes Rogers rescued Alexander I. an monarch of all the Russias, befriended Defoe and Dovers powder with which I was familiar long [illegible] fun it was my mothers favourite specific for abortion, a threatened or developing cold in the head. In this role incidentally it was no more—or less—effective than most of its more fashionable successors.

Reference to the Dictionary of National Biography (1906 edition) shows that when he [illegible] the life of Thomas Dover in that work Sir Norman Moore could add to my information on the authorship of The Ancient Physician's Legacy, his treatment of fevers especially smallpox and the plague his addiction to excessive bleeding his advocacy of the use of antimonial mercury as an antidote remedy and his capture of Guayaquil. He [illegible] to associate Thomas with Robert Dover the founder of the Cotswold Games held at Barton on the Heath and subject of the immediately preceding life in the D.N.B. who was his grandfather.

Kenneth Dewhurst has added a good deal to this not very extensive outline. He has tracked it was his family discovered where he studied and when he graduated as a Bachelor of Arts of Oxford and of Medicine of Cambridge certified his apprenticeship to Sydenham and has found out a good deal about his periods of practice at Barton in Bristol and London and about his methods of practice and his financial affairs. He also upsets the too romantic theory turned pirate legend—the expedition led by Woodes Rogers was a privateering one regularly licensed by H.R.H. Prince George of Denmark then Lord High Admiral and consequently entirely legal and respectable. In this expedition Dover played the parts of second captain on board the *Duke* captain of marines chief medical officer and President of the Council with a double vote—he was the second largest shareholder in the enterprise. Evidently a versatile man who natural[illegible] the traditional friendship between the naval medical officer and the Royal Corps and carried it to its logical conclusion.

[illegible] that he ... [illegible] ... The article in the N.C.B. [illegible] made by Kenneth Dewhurst [illegible] ... A book confined to a life of Thomas Dover [illegible] ... Dover's ... [illegible] ... medical knowledge in the later years of [illegible] ... half [illegible] ... We [illegible] from our professional [illegible] ... rather surprisingly the least interesting chapters in the [illegible] ... For this the author [illegible] ... pages of Woodes Rogers's book "A Cruising Voyage round the World".

The appendix dealing with the [illegible] ... Robinson Crusoe is interesting [illegible] ... reading it that a man of [illegible] ... A Journal of the Plague Year [illegible] ... can have needed [illegible] ... Alexander Selkirk in the [illegible] ... quoted remark of Dr. [illegible] ... appointed sailing master to Dover when [illegible] ... appointment that surely [illegible] ...

The Quicksilver Doctor [illegible] ... [illegible] instalment of medical biography [illegible] ... There is [illegible] bibliography [illegible]

Aids to Ophthalmology. By P. McG. Moffatt, M.D. [illegible] M.R.C.P. [illegible] D.O.M.S., Consultant Ophthalmic Surgeon [illegible] Hammersmith, West London and St. Mark's Hospital [illegible] Medical School. Eleventh Edition. 1957. Pp. [illegible] London: Baillière, Tindall and Cox. Price 10s. 6d.

This edition of this well known book [illegible] ... is printed on better quality paper [illegible] ... The chapter on therapeutics has been [illegible] ... and the new antibiotic[illegible]

This book is not a substitute for the [illegible] ... a great deal of readily accessible [illegible] ... and useful reference book.

Skin Diseases for Beginners. By R. B. C[illegible] M.R.C.P. [illegible] General Hospital, and P. D. C. Kinmont, M.R.C.P. [illegible] Infirmary. Line drawings in black and white [illegible] 1957. Pp. 43. London: H. K. Lewis and Co. [illegible]

This booklet, which as the authors point out [illegible] ... coming is the kind of thing for which [illegible] ... newly qualified practitioners and nursing staff [illegible] ... have neither the time nor the inclination [illegible] ... should find this easy to absorb an excellent [illegible] ... dermatology. The [illegible] section [illegible] ... the numerous drawings are most helpful.

In any book on skin diseases the [illegible] ... and diagnosis. The authors [illegible] ... conditions [illegible] of the [illegible]

applies t[illegible] be required systemically but an exception should be made with for wid[illegible]rtain ointments such as neomycin which are usually used topically. The author's substances weak mercury and the quinoline derivatives are far from foolproof. The same criticism must be levelled against the use in tinea of Whitfield's ointment which is admitted to have irritant properties but recommended nevertheless.

In spite of these minor criticisms the reviewer feels that there should be a place for this book in every Sick Bay throughout the Service.

MEDICINE AND THE NAVY 1200–1900 Volume I—1200–1649 By J. J. Keevil Introduction by H. H. Dale First Edition 1957 Pp. 284 with 14 Plates Edinburgh and London: E. and S. Livingstone Limited. Price 40s.

It is a matter for congratulation that one recently retired naval medical officer has succeeded so well in writing a history of the naval medical service. After a distinguished naval service in which he was one of the few regular medical officers to receive the *D.S.O.* Surgeon Commander Keevil is a Fellow of the Royal Hist. Society and Fellow of the Society of Antiquaries retired in 1946 to pursue a literary career. In 1952 he published Hamey The Stranger's Son and he has written several historical articles for this Journal over the years.

Volume I of Medicine and the Navy is a systematic historical study of the effects upon men serving in the Navy and of the diseases and injuries to which the conditions of service render them specially liable. This intensive work has been rendered possible by the interests of Surgeon Commander Keevil who has the twofold qualifications of enterprise in historical research and of naval experience and by the support of the Wellcome Trustees "for the collection of information of every kind connected with the history of medicine".

The text describes how since A.D. 1200 (before which date no provision of any kind was made for the medical and surgical care of the sailor) provision has been made or attempted at successive periods for the prevention of the special dangers to the life and health of seamen and for the care and mitigation of their results whether they have been due to infections to faults of nutrition or to various special kinds of physical violence or exposure. It is only to be expected that such a historical study would bring to notice all too many examples of the great and solid advantages which might have been gained and of the loss and suffering which might have been avoided by a readier attention to hygiene and to adequate victualling and clothing as well as by more generous encouragement of medicine and its special requirements in naval service. It seems difficult to account for the long neglect of this subject in the Royal Navy and we are now fortunate to have a book which fills this gap in the historical records of British achievements in particular.

The twentieth century medical officer in one of Her Majesty's Ships may not always see the relationship between the conditions under which he serves and events which took place seven hundred years ago. Naval development goes farther back than the Commonwealth Period when ships were a personal possession of the King and there were King's mariners throughout the ages.

The first section of the history describes the conditions in the ships in which these seamen served and the slender provision which they shared with landsmen when sick or wounded: they were disembarked for treatment; also inductions of the treatment they received and the types of men who administered it.

In later sections of the book it becomes evident that some regulation or administrative provision is ever more than a formal definition of a mediaeval custom. Also it becomes plain that the ship surgeon was a late arrival on the naval scene and why it was difficult for him to establish his usefulness to a force which had for centuries endured without his [illegible]ices. It shows how the schism in the profession at the close of the Middle Ages resulted

in centuries of conflict between physicians and surgeons and why the sea surgeon for long qualified only in surgery was at times unequal to meeting the medical problems with which he might be confronted The future of the College of Medicine and Surgery to remain united in A D 1424 was to influence Admiralty policy nearly four hundred years later

During the Mediæval Period sea battles were fought by boarding parties of mariners and a few seamen navigated the ship The surgeon received the wounded who subsequent to a sea battle were landed at the nearest seaport and admitted in a Hospital of Piety controlled by the Church

In the early Stuart Period many expeditions set sail north south east and west and a description is unfolded of disease and mortality due to privation ignorance and prejudice The harmful effects of the mosquito in causing Yellow Fever and Malaria were unknown and it is remarkable that the sovereign remedy of lime juice in the cure of Scurvy remained unheeded during the two centuries although advised intermittently The theory persisted that adverse atmospheric conditions subtle and aloof affected the bodily humours but it seems that any deliberate effort to make the ship less inhabitable was unavailing by reason of the design of the vessel Hygiene deficiency becomes clear when we read that there was a firm ruling that the crew might not undress during a commission Moreover mortality was due not only to dietary deficiency but dietary unwholesomeness A contributory feature of epidemics was due to the manning of ships by impressed men in a poor state of health

Finally it is of interest that the Maritime Assizes of the Kingdom of Jerusalem as studied by Eleanor Duchess of Aquitaine in A D 1145 becomes so to speak, the first column of the present Queen's Regulations and Admiralty Instructions and that a feature of sea service throughout the ages was a need of medical man-power and resultant coercion and pressing of surgeons in ships Meanwhile the medical service of the Royal Navy has been described as born of no religion the offspring of sheer necessity It owed much to the Caroline sea surgeons who also had experience in ships of the East India Co and to King Charles medical reforms which led to a closer association between the Company of Apothecaries and the Company of Barber Surgeons and the Navy The sea surgeon now possessed a representative body which made efforts to raise the standard of education to establish an adequate rate of pay and to ensure the supply of a fitted medical chest of instruments and drugs These improvements are dealt with in the last chapter entitled "The Sum of Achievement John Woodall's book Surgeon's Mate was by A D 1639 with all surgeons common in use while the Duties of a Sea Surgeon by Captain John Smith in 1626 gave the surgeon a clear position in the organization of the ship

One is reluctant to offer any suggestions on the plan of Volume I but possibly the addition of one or two maps would enable the reader to follow more clearly some of the voyages to hitherto unexplored lands overseas

Volume I is appropriately bound in a naval reefer a navy blue cover with gold lettering and a red stripe widest The illustrations reproductions and finish are of finest materials and expert work by T and A Constable Limited To each of the three sections is added a bibliography and finally a chronology of events

This is a book which with its narrative of sea faring problems will afford contemplative glimpses of the vicissitudes of the naval surgeon since medieval days and the transition from immature surgical work on board to the culmination of a Royal Naval Medical Service

SYNOPSIS OF TROPICAL MEDICINE. By Sir Philip Manson Bahr *CMG DSO* MA MD DTM&H Cantab FRCP London Third edition 1937 Pp xiii + 287 London Cassell & Company Limited Price 22s 6d

This excellent handy publication would be a most valuable addition to the library of any doctor practising tropical medicine and might well accompany him on tours of duty when he must travel light.

As a synopsis it covers the whole field of tropical medicine in a concise and efficient

FLUID BALANCE IN SURGICAL PRACTICE. By L. [illegible] F.R.C.S. Eng. Second Edition. 1957. Pp. vi + 140, with 42 ill[illegible] (Medical Books) Limited. Price 20s. net.

The second edition of this excellent little book [illegible] its predecessor. The author has brought it up [illegible] problems and includes a section on fluid bal[illegible]

Illustrative case records in the multinod[illegible] proof of how patients completion should [illegible] case. While it may be somewhat outside the p[illegible] the work would be enhanced by a [illegible] particular is being popularized in some [illegible] be considered in conjunction with fluid balance. W[illegible] balance the treatment of many patients can be [illegible]

The book in its practical and honest exposition of [illegible] essential guide to all those dealing with [illegible] ments in the normal way.

We acknowledge with thanks receipt of the following publications:

Anales De La Facultad De Medicina Montevideo. Annales of Tropical Medicine and Parasitology. British Medical Bulletin. British Medical Journal. Bulletin Internationale Des Services de Santé. Chinese Medical Journal. Guy's Hospital Gazette. Journal of the Royal Army Medical Corps. Journal of the Royal Naval Scientific Service. Kyushu Journal of Medical Science. Middlesex Hospital Journal. Military Medicine. Ply[illegible] Bohemoslovenica. Proceedings of the Staff Meetings of the Mayo Clinic. Revue De Medecine Navale. Revista De Medicina Tecnica [illegible] St. Mary's Hospital Gazette. The Australian Journal of Experimental Biology and Medical Science. The Broad [illegible] Westminster Hospital. The Bulletin of Tokyo Medical and Dental University. The [illegible] Journal of Medical Sciences. The Journal of the Boston City School of Medicine. The Journal of the Irish Medical Association. The Kumamoto Medical Journal. The Medical Press. The Nagoya Journal of Medical Science. The Nuffield Foundation—Twelfth Report. The Ulster Medical Journal. Tropical Diseases Bulletin. University of Durham Medical Gazette. Yokohama Medical Bulletin. Zentralblatt für Medizin.

BOOKS RECEIVED

THE GRAND VOYAGE. By John Rowan Wilson. Pp. 250. London: William H[illegible] Limited. Price 15s. net.

THE HISTORY OF THE BRITISH NAVY. By Michael Lewis. Pp. 288. Harmondsworth: Penguin Books Limited. Price 3s. 6d.

News of the Service

OBITUARY

Surgeon Captain A FAIRLEY *O B E* R N (Rtd) died on the 7th August 1957 aged 73 Born on the 1st November 1883 he qualified M B, Ch B in Glasgow in 1907 and entered the Royal Navy as a Surgeon on the 5th November 1909 Promoted Surgeon Lieutenant Commander in 1915 and Surgeon Commander in 1921 he was placed on the Retired List at own request on 6th November 1927

During World War I he served in H M Hospital Ship *Delta* H M Ships *Orvieto* and *Pelorus* and at Westgate Air Station He was attached to the R A F from October 1918 to July 1919

Surgeon Captain Fairley was recognized as an international authority on the medical aspects of gas warfare and he was appointed as Head of the Physiological Section of the Chemical Defence Experimental Establishment Porton in 1932 where he did most valuable work until his final retirement in 1951

He was granted the rank of Surgeon Captain in 1942 and awarded the *O B E* in 1946

Surgeon Captain W R HARRISON *O B E*, R N (Rtd) died on the 9th June 1957 aged 80 Born on the 12th February 1877 he qualified M R C S Eng and L R C P Lond in 1902 and entered the Royal Navy as a Surgeon in June 1902 Promoted Staff Surgeon in 1910 and Surgeon Commander in 1916 he was placed on the Retired List (Age) on 12th February 1927 with the rank of Surgeon Captain

During World War I Surgeon Captain Harrison served in H M Ships *Amethyst Inconstant* and *Attentive* and the 6th Destroyer Flotilla

He was awarded the *O B E* in 1919 for distinguished service as Senior Medical Officer of the 6th Destroyer Flotilla

Surgeon Captain E A G WILKINSON *O B E* R N (Rtd) died on the 31st May 1957 at the age of 81 Born on the 20th January 1876 he qualified M R C S Eng and L R C P Lond in 1903 and entered the Royal Navy as a Surgeon in May 1903 Promoted Staff Surgeon in 1911 and Surgeon Commander in 1917 he was placed on the Retired List (Age) on 30th January 1926 with the rank of Surgeon Captain

During World War I Surgeon Captain Wilkinson served in H M Ships *Iron Duke* and *Revenge* and was awarded the *O B E* in 1919 in recognition of distinguished service during the War

Surgeon Commander C S RUTHERFORD R N (Rtd) died on the 5th July 1957 aged 58 at the Royal Southern Hospital Liverpool 8 Born on the 22nd November 1898 the seventh son of the late William Rutherford M D M Ch F R C P Ed of Ballinrobe, Co Galway he served as a Surgeon Probationer in the first World War After taking his medical degree in the Royal College of Surgeons Dublin in 1921 he entered the Royal Navy as a Surgeon Lieutenant the following year Promoted Surgeon Lieutenant Commander in 1928 and Surgeon Commander in 1934 he was placed on the Retired List on 20th December 1953

During World War II Surgeon Commander Rutherford served in H M Ships *Roberts Hannibal* and *Defiance* in H M Dockyard Hong Kong R N Barracks Devonport and Portsmouth also in R N A H Barrow Gurney

Surgeon Lieutenant Commander L S LINDEN [illegible] aged 36 Born on the [illegible] August 1920 [illegible] entered the R N V R on 9th March 1945 [illegible]

He re-entered the Royal Navy as a Surgeon [illegible] and served in R N Hospital Haslar until [illegible] *Tower* where he was serving at the time [illegible]

HIGHER DEGREES

Member Royal College Physicians (Edin)—Surgeon Commander [illegible] R N
Diploma in Public Health—Surgeon Commander I H Durin R N
Diploma in Industrial Health—Surgeon Lieutenant J D W [illegible] R N
Diploma Royal College Obstetrics and Gynaecology—Surgeon Lieutenant [illegible] R N
Higher Dental Diploma—Surgeon Commander (D) F J Hill R N

PROMOTIONS

To Surgeon Lieutenant Commander—J F Ryan (17 8 57)

TRANSFERS TO PERMANENT LIST

Surgeon Lieutenant A H Tinley
Surgeon Lieutenant Commander (D) R N Ridler

ENTRIES FOR SHORT SERVICE COMMISSION

M J Cox MB BS N J Denham MB ChB M W Eldridge MB ChB [illegible] Fraser MB ChB G D Frost MB, ChB J B Gill MB BCh D A F Shephard MB BS DA M G Smedley MB BCh MRCS LRCP E J Williams MB BS MRCS LRCP C W O Windsor MB ChB MRCS LRCP J T Bowsher BDS J Drain BDS LDS D M Tinkler BDS

RETIREMENTS

Surgeon Captain J Johnston
Surgeon Commander D A Hounsden
Surgeon Lieutenants N J Cobb [illegible] Convey I Hall J W E Mark
Surgeon Lieutenant-Commander (D) J D O Rutledge
Surgeon Lieutenant (D) M D Prosser

WARDMASTER OFFICERS

RETIREMENTS

Wardmaster Lieutenants W H P Wilkinson MCSP R E Workman

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

PROMOTIONS

To Matron—Miss B F Bailey *A R R C*
To Superintending Sister—Miss M J Miller

TRANSFERS TO PERMANENT LIST

Miss M J Miller Senior Nursing Sister Miss P J Perrin Senior Nursing Sister Miss A M Fenna Senior Nursing Sister

RETIREMENT

Miss M B Goulton *A R R C* Superintending Sister

ADMIRALTY FLEET ORDERS—1957

(This page is printed for filing)

1714.—Medical—Trichlorethylene—Precautions for Use in Degreasing Plants, etc.

1717.—Ratings—National Servicemen—Position of Sick Berth Ratings with Regard to State Registration

1744.—Dental Stores—Cerate Penicillin with Flovazole—Manufacture Discontinued

1776.—Pay and Allowances—Pay—Medical and Dental Officers—Specialist and Diploma Pay

1781.—Transport of Invalids Transferred to Hospitals or to Own Home in Northern Ireland the Irish Republic, Isle of Man and Channel Islands.

1782.—Medical—Transport in the United Kingdom—Railway and Ambulance

1836.—Promotion—R.N. Officers—Zones

1860.—Medical Stores—Novox Resuscitation Apparatus.

1900.—Medical—Eyesight—Spectacles—Supply, Repair and Replacements to R.N., R.M. and W.R.N.S. Personnel Home and Abroad, Admiralty Civilians Abroad and Wives and Families of Naval and Admiralty Civilian Personnel Abroad—Arrangements.

1967.—Medical—Continuation of Medical Treatment of Release, Invaliding or Grant of Leave—Notification to Civilian Doctor of Service Medical History—Introduction of F. Med. 133 and F. Med. 136—Abolition of Form M. 168

1968.—Medical—Dental and Hospitals Consultants.

1969.—Medical—Vaccination and Immunization.

2022.—Courses—Ratings—Dental Training for Sick Berth Attendants and Probationary Wren Dental Surgery Attendants.

2091.—Medical—Suppressive Treatment of Malaria.

2136.—Hospitals and R.N. Medical Establishments—Scale of Charges for Treatment

2150.—Medical—Material Relating to Biopsies on R.A.F. Patients.

2151.—Medical—Novox Resuscitative Apparatus—Adjustment and Use

2195.—Medical—Vaccination and Immunization—International Certificates

2196.—Officers—Medical Officers—Volunteers for Flying Course for Appointments in Pilot Status for Specialization in Aviation Medicine

2201.—Surgeons and Agents

2220.—Medical Stores—Fitting of Replacement X-ray Tubes on Units Fitted with Milliampere Pre-Selectors.

2268.—Ratings—Sick Berth Ratings—Specialist Training in Physiotherapy

2267.—Medical—Diseases of the Chest

2299.—Medical—Decontamination—Instructions.

2318.—Medical—Directions in Cases of Prolonged Treatment

2319.—Medical—Personnel Sick in Shore—Reports to M.D.G. Not Required

2443.—Medical—Joint Services and Factory Department Committee on Occupational Health

2451.—Courses—R.N. Medical School—Courses of Instruction

2452.—Medical—Civil Service Competitions—Medical Examination of Successful Candidates.

Notice

THE EDITOR invites medical officers to send in original papers on professional subjects, travel personal experiences &c. Items of news and matters of interest to the naval medical service will be welcomed from ships and establishments on home and foreign stations. Notices of births, marriages and deaths are inserted free of charge to subscribers

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INDEX

ARTICLES AND CLINICAL NOTES AND CASES